U.S. Department of Transportation
Federal Aviation Administration
Southwest Region

FINDING OF NO SIGNIFICANT IMPACT

Proposed Closure of Runway 17/35
Albuquerque International Sunport
Albuquerque, New Mexico

December 23, 2011

I. INTRODUCTION

The purpose of this Finding of No Significant Impact (FONSI) is to briefly present the reasons why the approval of Federal actions supporting the proposed closure of Runway 17/35 at Albuquerque International Sunport will not have a significant effect on the human environment. The City of Albuquerque, owner of the airport, has requested the following Federal actions:

- Approval of the revised Airport Layout Plan showing the proposed runway closure
- Removal of Runway 17/35 pavement and portions of taxiway pavement that lead to its thresholds

Attached to this FONSI is the environmental assessment (EA) on which the finding is made.

II. SUMMARY

The FEA was prepared pursuant to the provisions of the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) regulations (40 C.F.R. Parts 1500-1508). Additionally, the FEA meets the guidelines identified in FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures* and 5050.4B, *NEPA Implementing Instructions for Airport Actions.*

As documented in the EA, no environmental thresholds of significance were found to be exceeded. After review of the FEA, the public hearing transcript and correspondence received from citizens, letters received during the intergovernmental coordination process, and other supporting documentation, the FAA determined that a FONSI was justified for the proposed airport action.

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As documented in Appendices H, I and J, during preparation of the EA, the proposal was coordinated with appropriate Federal, state, and local agencies. Local citizens were also encouraged to provide comments. Notice of a public hearing was advertised in the local papers and a public hearing was held on October 6, 2011. The major concerns expressed during public involvement and agency coordination have been addressed.

III. PURPOSE AND NEED

The purpose and need for the proposed runway closure are presented in Chapter 1 of the EA. Runway closure was originally recommended by the 1994 ABQ Master Plan Update for the purposes of improving airfield safety and reducing maintenance costs. The July 2003 ABQ Master Plan Update revalidated that recommendation. As discussed in the EA, Runway 17/35 intersects each of the three other runways, thereby increasing the potential for runway incursions. In addition, the 1995 extension of Runway 03/21 reduced the need for and use of Runway 17/35 for commercial service and cargo operations. Finally, Runway 17/35 is deteriorating and, given the aforementioned safety issues and lack of use, the airport sponsor does not wish to expend precious funds on rehabilitating it. In summary, closure of Runway 17/35 would not adversely impact operational capacity, and it would increase airfield safety and reduce maintenance costs.

IV. ALTERNATIVES

Alternatives are addressed in Chapter 2 of the EA. Several alternatives were considered but eliminated from further consideration due to factors such as not meeting the project purpose and need or financial infeasibility. The sponsor's preferred alternative is the closure of Runway 17/35.

Since NEPA requires consideration of the No Action alternative, that was carried into the final array along with the Proposed Action of runway closure. While it might appear that the No Action alternative would consist of leaving Runway 17/35 open but allowing its pavement to continue to deteriorate until fewer and fewer and, finally, no aircraft would use it, such a course of action would place the airport sponsor in violation of its Federal assurances to operate a safe and efficient airport. Therefore, for purposes of the EA, the No Action alternative consisted of reconstructing Runway 17/35 to its original length of 10,000 feet and restricting its use to general aviation aircraft weighing 12,500 pounds or less. It should be noted that the No Action alternative would not meet the project purpose of increasing airfield safety.

The FAA explored and objectively evaluated reasonable alternatives that were considered practical and feasible in meeting the purpose and need.

The alternatives were evaluated based on numerous factors, including environmental impacts, cost considerations, air traffic capacity/delay factors, airspace utilization, and safety. After a complete consideration of all alternatives studied in the EA, and previous

studies, closure of Runway 17/35 was selected as the preferred alternative by the city of Albuquerque, and FAA concurred in this recommendation. The runway closure alternative was preferred because, among other factors, it would improve airport safety by reducing the potential for runway incursions, would avoid expenditure of precious aviation funds on a little-utilized runway, and would best meet FAA's statutory mission of promoting a safe and efficient nationwide airport system.

Therefore, the FAA, in this FONSI, has determined that closure of Runway 17/35, the Proposed Action, is the FAA's preferred and selected alternative. In arriving at this decision, the FAA considered all pertinent factors, including the environmental impacts as well as the FAA statutory charter in the Federal Aviation Act of 1958, as amended, to encourage and foster the development of civil aeronautics (49 U.S.C. § 40101).

V. ENVIRONMENTAL CONSEQUENCES

Potential Impact Resource Categories

The unique nature of the proposal – closure of a runway – presents a rather limited potential for significant environmental impacts. The impact categories with the most potential for such impacts were noise and compatible land use.

As documented in Chapter 4 of the EA, the proposed action would not result in a minimum increase of DNL 1.5 dB for any noise sensitive receptors. Although the number of noise sensitive receptors within the DNL 65 contour would increase from the base year to five year condition, that number would be less with the proposed action than the no action alternative.

Based upon this analysis, the FAA determines that the proposed action would result in no significant noise or compatible land use impacts. Therefore, mitigation is neither required nor proposed.

As documented in Chapter 4 of the EA, no other impact categories would be significantly affected.

VI. CONDITIONS

As prescribed by 40 CFR § 1505.3, the FAA shall take steps as appropriate to the action, such as through special conditions in grant agreements, property conveyance deeds, releases, airport layout plan approvals, and contract plans and specifications and shall monitor these as necessary to assure that representations made in the EA and FONSI with respect to mitigation of impacts will be carried out. Mitigation plans to be developed will be coordinated with the appropriate jurisdictional agencies.

As previously stated, Chapter 4 of the EA documents that there would be no significant impacts to any of the specified impact categories. Consequently, no conditions pertain to this FONSI.

VII. DECISION CONSIDERATIONS AND ADDITIONAL FINDINGS

Throughout the development of the airport, including the proposed improvements described in Part III above, the FAA has made every effort to adhere to the policies and purposes of NEPA, as stated in CEQ Regulations for Implementing NEPA, 40 CFR § 1500-1508. The FAA has concentrated on the truly significant issues related to the action in question. In its determination whether to prepare an EIS or process the EA as a FONSI, the FAA weighed the following considerations:

In accordance with 40 CFR § 1507.3 and 1501.4, the Order 5050.4B, represents the agency procedures to supplement the CEQ Regulations for airport development projects.

After examination of the EA, comments from Federal, state, and local agencies, public comments, as well as all other evidence available to the FAA, the FAA has determined the available record demonstrated that no thresholds indicating the potential for significant impact were exceeded and an EIS is not required. In addition, the FAA determined that existing evidence available to the agency clearly points to the proposed project as beneficial in fulfilling the FAA's statutory mission of promoting a safe and efficient nationwide airport system, and further study of the issues in an EIS will result only in "amassing needless detail." As the nation's aviation agency, the FAA has the ultimate technical expertise to develop, evaluate, and select actions and alternatives that would result in safe and efficient use of U.S airspace as prescribed in 49 U.S.C. §40103(a). In accordance with 49 U.S.C. Section 44502(b), the FAA has determined that the proposed action is reasonable necessary for use in air commerce.

The FEA has adequately provided the agency with the information it needs: (a) to make an informed, objective decision on the environmental effects, as well as other effects, of the proposed project; and (b) to take actions that protect, restore, and enhance the environment. The FAA weighed both the potential positive and negative consequences that this proposed action may have on the quality of the human environment. Further processing of this proposed action in an EIS would needlessly generate additional paperwork and a rehashing of issues, while simultaneously impeding the FAA from carrying out its mission and blocking a primary goal of NEPA -- that of fostering excellent action.

In summary, the FAA opts to use a finding of no significant impact based on its conclusions that the proposed project will not have a significant effect on the human environment.

RECOMMENDED FOR APPROVAL: _____ 12/23/2011
Environmental Specialist Date

APPROVED: _____ 12/23/2011
Acting Manager, Louisiana/New Mexico Airports Development Office Date

ALBUQUERQUE

INTERNATIONAL SUNPORT

Final Environmental Assessment for the Proposed Closure of Runway 17-35

OCTOBER 2011

FINAL
ENVIRONMENTAL ASSESSMENT

For the Proposed Runway 17-35 Closure at
ALBUQUERQUE INTERNATIONAL SUNPORT
Albuquerque, New Mexico

Prepared for the
Federal Aviation Administration, Lead Federal Agency
and the
United States Air Force, Cooperating Agency
on Behalf of the
City of Albuquerque Aviation Department

By
COFFMAN ASSOCIATES, INC.

October 2011

This Environmental Assessment becomes a Federal Document when evaluated and signed by the responsible FAA Official.

Responsible FAA Official _____ Date _____

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Albuquerque, New Mexico

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Chapter One

PURPOSE AND NEED

Chapter One
PURPOSE AND NEED

Albuquerque International Sunport is identified in the National Plan of Integrated Airport Systems (NPIAS) as a primary commercial service airport medium hub. The airport, owned and operated by the City of Albuquerque, New Mexico, is situated on approximately 2,039 acres and serves all segments of the air transportation industry including commercial airline activity, air cargo, and general aviation users. Several United States military aviation units are accommodated at the adjacent Kirtland Air Force Base, which also utilizes the airfield. **Exhibit 1A** depicts the location of the airport in its regional setting. Refer to Chapter Three for more information regarding the airport's existing facilities and general location.

1.1 PROJECT BACKGROUND

An update to the Albuquerque International Sunport's Master Plan was completed in July 2003. The purpose of the Master Plan Update was to evaluate the airport's capabilities and role in the national aviation system, to forecast future aviation demand, and to plan for the timely development of new or expanded facilities that may be required to meet that demand. The study examined airside and landside alternatives and recommended an airport development plan and improvement schedule. Among other things, the document revalidated the need to close Runway 17-35. The closure of the runway was originally recommended in the 1994 *Albuquerque International Sunport Master Plan* to improve airfield safety and to reduce maintenance costs.

In regards to safety, Runway 17-35 physically intersects with each of the other three runways on the airport, thereby increasing the potential for runway incursions. The FAA defines a runway incursion as "any unauthorized intrusion onto a runway, regardless of whether or not an aircraft presents a potential conflict." In an effort to increase awareness and safety at some of the nation's busiest airports, including Albuquerque International Sunport, the FAA has published a "Hot Spots List." The International Civil

Aviation Organization (ICAO) defines a hot spot as "a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary." The areas on the airport where Runway 17-35 converges with Runways 12-30 and 3-21 and Taxiways C, F, and G are considered "hot spots." The elimination of these "hot spots" would greatly increase operational safety and reduce the potential for runway incursions. Existing airfield facilities and the location of the runway incursion "hot spot" are depicted on **Exhibit 1B**.

Since the adoption of this master plan, the use of Runway 17-35 has dramatically decreased due to the extension of Runway 3-21 and Letters of Agreement (LOA) which have been put into place regarding runway use, as well as the continuing deterioration of the Runway 17-35 pavement condition.

- **Extension of Runway 3-21.** Runway 3-21 was extended in 1995 to better accommodate commercial service aircraft, and thus improve the airport's operational capacity as it acts as a "poor man's parallel."[1] Due to this, the need and use of Runway 17-35 for commercial service and cargo operations has decreased.

- **Letters of Agreement.** Two LOAs have been put into place for operations on Runway 17-35. Copies of both LOAs are contained in **Appendix E** and summarized as follows:

    - A LOA dated January 30, 2006 between the Albuquerque International Sunport Air Traffic Control Tower, the City of Albuquerque Aviation Department, Kirtland Air Force Base, 58th Special Operations Wing (SOW), and the 150th Fighter Wing have established that turbojet and turboprop aircraft shall not use Runway 17-35 for departures unless the crosswind component on other available runways exceeds 20 knots during dry runway conditions, or 15 knots during wet runway conditions. The LOA also states that Runway 17 may not be used for arrivals unless the crosswind component on other available runways exceeds 15 knots. A note to this LOA indicates that Runway 17-35 is restricted to use by aircraft weighing 12,500 pounds or less, regardless of wind conditions.

    - A second LOA dated February 1, 2006 between the Albuquerque Aviation Department, Albuquerque Airport Traffic Control Tower, and the 58th SOW states that 58th SOW aircraft are allowed to conduct routine day and night training to all runways except Runway 17-35 during daylight hours. SOW night vision goggle (NVG) landing training is conducted primarily on Runway 35 and the primary runway for NVG takeoff training is Runway 8.

- **Runway condition.** During the master planning process, the runway condition was classified as "poor" and it was estimated to cost $27 million to rehabilitate the runway to safely continue operations by larger aircraft on the runway. Pavement studies undertaken by Molzen-Corbin & Associates in 2010[2] re-evaluated and confirmed the 2003 studies. Pavement core samples taken in March 2010 at random locations along Runway 17-35 showed stripping in the underlying asphalt lifts in various stages from low severity (noticeable only on close examination) to extreme severity (virtually clean aggregate). The pavement surface condition index for Runway 17-35 was calculated at a rating of 28 out of 100 from data gathered during the study. It was concluded that the pavement surface was in poor condition, with various severities of rutting,

[1] Since Runway 3-21 does not intersect with primary Runway 8-26, this provides a higher capacity that, in certain operational scenarios, is similar to that of a parallel runway.

[2] A copy of the *Runway 17-35 Pavement Condition Report and Rehabilitation Analysis* is contained in Appendix D.

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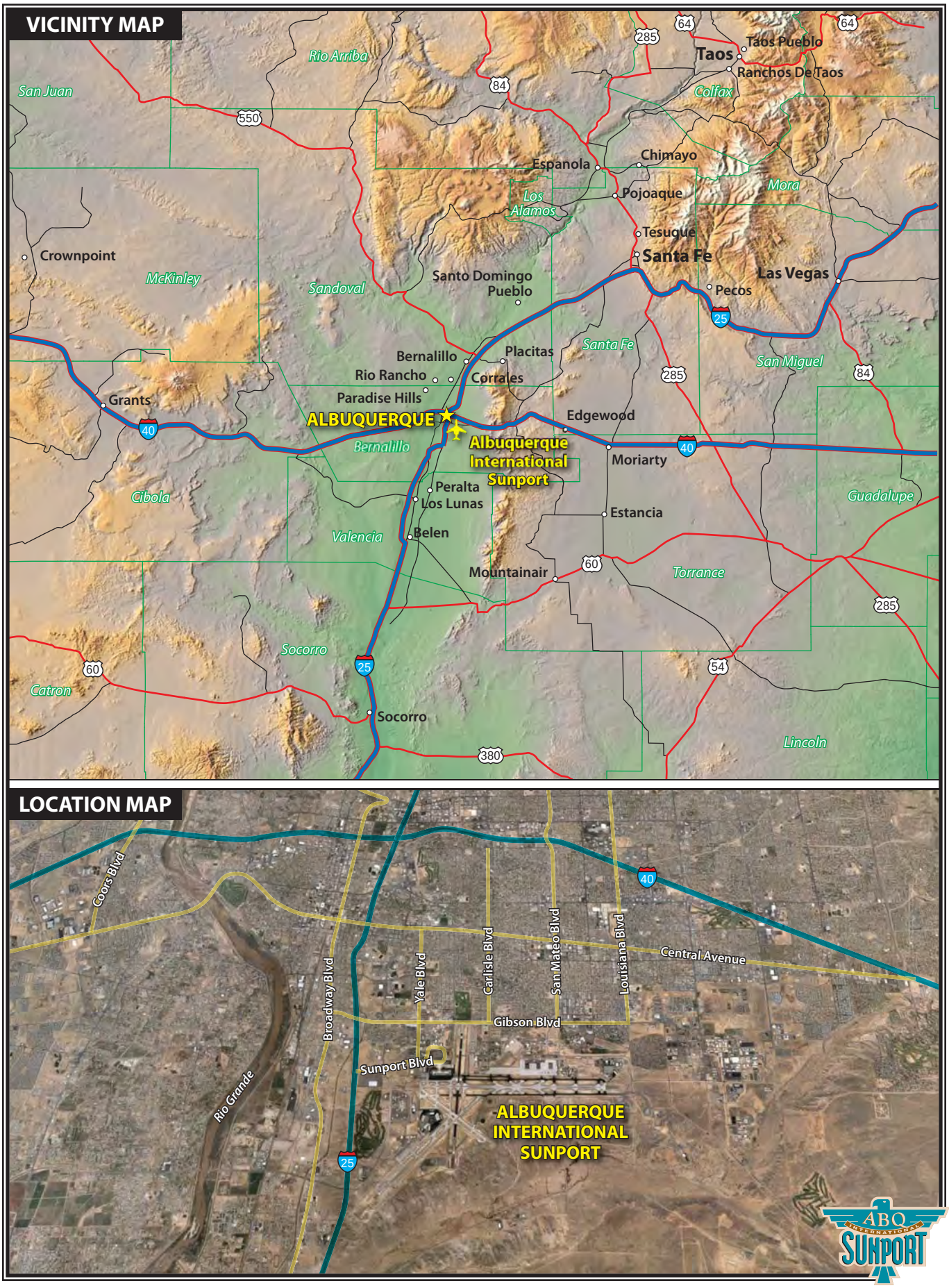

Exhibit 1A
AIRPORT VICINITY MAP

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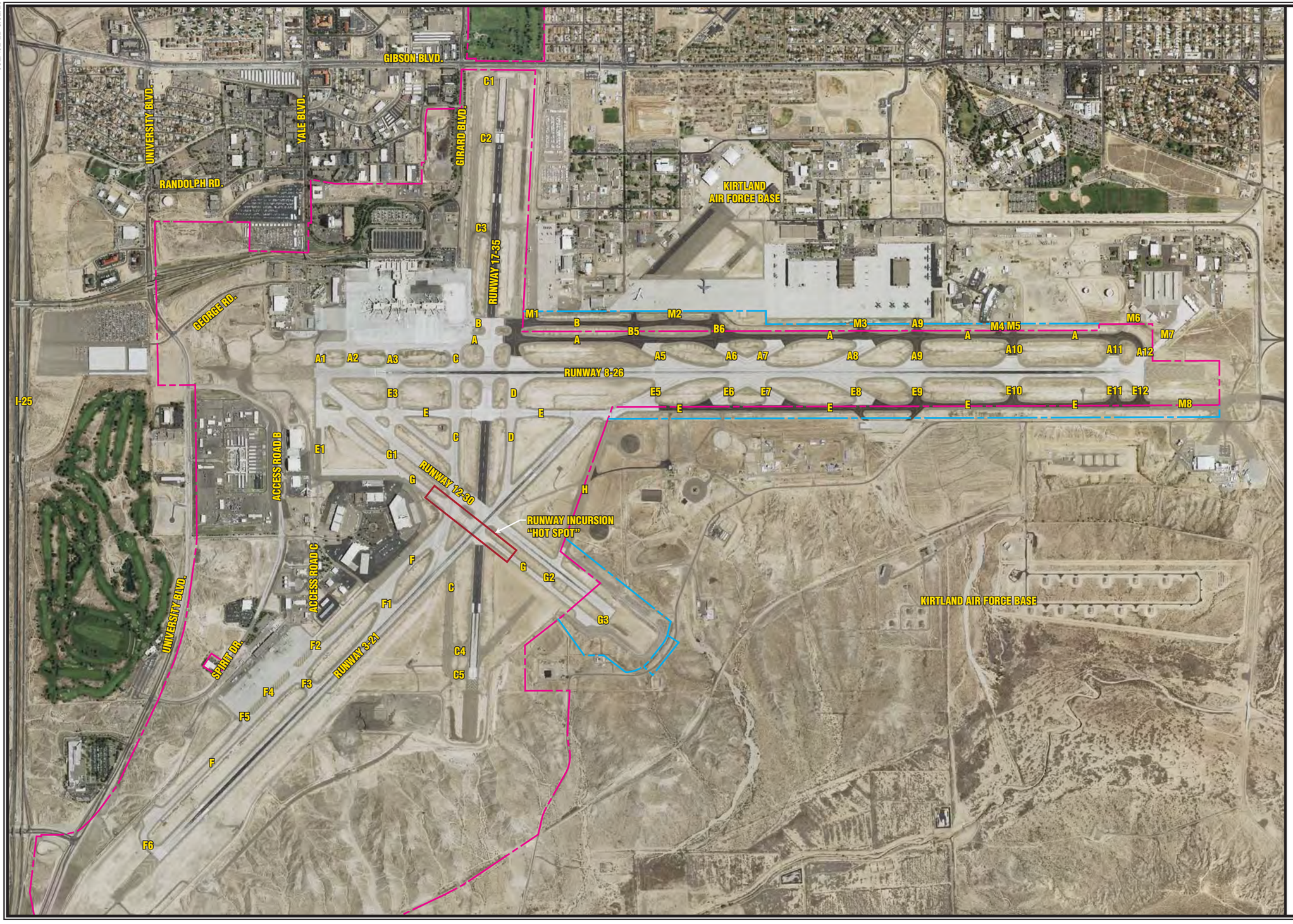

LEGEND

- Airport Property Line
- Lease Line

NORTH

0 1,600

SCALE IN FEET

AERIALPHOTOGRAPHY
NAIP DATA: 2009

ABQ SUNPORT

Exhibit 1B
AIRFIELD FACILITIES

raveling, and cracking evident across the majority of the runway surface. The condition of the pavement has reached a point that the surface will continue to fail and create foreign object debris (FOD) hazards from the deteriorating surface. Full pavement reconstruction was recommended as a minimum for the runway to be used by any type of aircraft. Reconstruction to air carrier standards was estimated to cost approximately $43.6 million. Reconstruction to continue the use of the runway for general aviation aircraft with gross take-off weights (GTOW) of 12,500 pounds or less was estimated at $14.1 million.

The City of Albuquerque is currently prepared to officially close Runway 17-35 to aircraft operations. This action requires evaluation in accordance with the *National Environmental Policy Act* (NEPA). Through NEPA, Congress requires federal agencies to consider the environmental effects of proposed actions and their reasonable alternatives. This Environmental Assessment (EA) was prepared in accordance with NEPA regulations and will evaluate the proposed closing and removal of Runway 17-35 by first outlining the need for the runway closure (Chapter One); followed by an evaluation of alternatives (Chapter Two); a discussion of the existing environmental resources surrounding the proposed runway closure (Chapter Three); and will conclude with a discussion of the potential environmental impacts of the proposed runway closure on identified environmental resources and means to mitigate any potential negative environmental consequences (Chapter Four).

1.2 PURPOSE AND NEED

The purpose of the Runway 17-35 closure is to improve the overall safety of operations at Albuquerque International Sunport as well as reduce airfield maintenance costs.

The need for the runway closure is supported by numerous studies which were undertaken by the FAA and the airport. The FAA's *2009 Runway Safety Report* identified Albuquerque International Sunport as a "high incursion airport." As described previously, Runway 17-35 intersects all three of the other runways, which creates "hot spots" and increases the potential for runway incursions and wrong runway departures. Additionally, the airport master plan concluded that the runway itself does not contribute significantly to the capacity of the airfield and, in fact, if used for more than the limited use it receives now, it would reduce airfield capacity. According to analysis undertaken for the master plan, the runway provides less than one percent improvement to the airfield wind coverage and by intersecting with the other runways, creates significant airfield incursion potential.

The following sections provide additional detail regarding the need to close Runway 17-35 at the Sunport.

1.2.1 Aviation Forecasts

Aviation demand forecasts have been prepared to estimate future levels of air traffic at Albuquerque International Sunport. Using 2008 calendar year data, new operations, enplanement, based aircraft, and fleet mix data was projected through 2030. The aviation forecasts are discussed in detail in **Appendix B** and summarized in **Table 1A**. As indicated in the table, operations at the Sunport are expected to increase through the planning period after reaching a low point in 2010. The airport, therefore, needs to contain a runway system capable of handling the increase in operations in a safe and efficient manner.

TABLE 1A
Forecast Summary
Albuquerque International Sunport

	2008	2010	2015	2020	2030
Annual Operations					
Itinerant					
Air Carrier	86,334	76,800	89,400	98,500	117,900
Air Cargo	10,818	11,000	11,400	11,800	13,400
Air Taxi	20,737	21,100	22,100	23,100	25,100
General Aviation	37,468	34,900	38,100	46,400	59,600
Military	18,105	18,500	22,800	22,800	34,000
Total Itinerant	173,462	162,300	183,800	202,600	250,000
Local					
General Aviation	3,261	3,000	3,300	4,400	5,400
Military	3,830	4,300	10,800	10,800	16,000
Total Local	7,091	7,300	14,100	15,200	21,400
Total Annual Operations	**180,553**	**169,600**	**197,900**	**217,800**	**271,400**
Based Aircraft	**145**	**147**	**160**	**170**	**190**

1.2.2 Capacity Analysis

To ensure the airport would be capable of handling the increase in operations described in **Table 1A**, an updated capacity analysis was prepared for this EA using current wind analysis, aircraft mix and operations data, and forecasts. A capacity analysis measures the capacity of the airfield facilities (i.e., runways and taxiways) in order to identify the impact airport developments have on the ability to meet operational demands.

Two separate analyses were prepared. The first utilized the methodology outlined in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*. This examines the airport capacity in terms of annual service volume (ASV). This analysis, which can be found in **Appendix C**, concluded that the airfield capacity of a three-runway system with Runway 17-35 closed would be capable of exceeding long term operational demands.

If Runway 17-35 were to be rehabilitated and used in a limited manner as it is presently, airfield capacity would increase by 0.6 percent. However, in all likelihood, if Runway 17-35 were rehabilitated to its present length of 10,000 feet, it would be used on a more frequent basis. Increased usage of Runway 17-35 would actually diminish airfield capacity due to the fact that the takeoffs and landings on Runway 17-35 cross all three of the other runways. Therefore, other aircraft operating from any of the other three runways must hold for the airline landing or departing on Runway 17-35.

The second analysis involved computer simulation modeling utilizing Jeppesen's Total Airspace and Airport Modeler (TAAM). TAAM was used to amass relevant simulation metrics for the various alternatives. These results also showed that only marginal operational impacts would result from the closure of Runway 17-35. This report is included as **Appendix F**.

1.2.3 Wind Analysis

To determine the significance of the Runway 17-35 contribution to wind coverage at the Sunport, the wind analysis undertaken for the master plan was updated to include the most recent 10 years of available wind data (2000-2009). This wind analysis can be found in **Appendix C**. The FAA requires that an airfield configuration provide no less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The wind analysis concluded that the overall airfield wind coverage would drop only slightly from 99.96 percent to 98.43 percent for 10.5 knot crosswinds if Runway 17-35 were closed exceeding the 95 percent FAA requirement.

1.2.4 Conclusions

The permanent closure of Runway 17-35 would reduce airfield incursion potential and reduce airfield maintenance costs. Airfield capacity and wind coverage would not be significantly impacted by the closure of Runway 17-35 and the resulting airfield configuration would remain fully capable of meeting long term operational demands.

1.3 SPONSOR PROPOSED ACTION

The City of Albuquerque is proposing the closure of Runway 17-35 and associated taxiways. These pavement areas are identified in red on **Exhibit 1C** and briefly described below. The proposed action is based on recommendations from previous airport master plans as well as analysis undertaken for this EA.

The sponsor-proposed action alternative results in the airport improving the operational safety of a runway incursion "hot spot" and improving airfield capacity and efficiency. Additional information regarding the aviation demand forecasts and airfield capacity are contained in **Appendix B** and **Appendix C**, respectively.

1.4 REQUESTED FEDERAL ACTION

The requested approval action includes the following:

- Airport layout plan (ALP) approval to reflect the development of the projects described within Section 1.3.
- Approval of further processing of an application for state and federal assistance to implement those Airport Improvement Program (AIP) eligible projects.
- Revise air traffic procedures to reflect the elimination of Runway 17-35.

1.5 DOCUMENTATION REQUIREMENTS AND STANDARDS

This EA has been prepared in accordance with the requirements of Section 102(2)(c) of the *National Environmental Policy Act* (NEPA) *of 1969* (PL 91-190, 42 USC 4321 *et. seq.*) and Title 49, Chapter 471 of the U.S. Code Federal Regulations. Through NEPA, Congress requires federal agencies to consider the environmental effects of proposed actions and their reasonable alternatives. The environmental conse-

quences of maintaining the existing airport facility will be evaluated as the no action alternative. The environmental consequences of the proposed airport improvements will be evaluated as the proposed action.

The Federal Aviation Administration (FAA) is the lead federal agency for NEPA compliance. Due to its use of the airport and specifically Runway 17-35, the United States Air Force is a cooperating agency. The format and subject matter included within this report conform to the requirements and standards set forth by the FAA as contained within FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions.*

This EA incorporates by reference all, or portions of, other technical documents that are a matter of public record. These documents, including the 2003 Airport Master Plan, either relate to the proposed action alternative or provide additional information concerning the environmental setting in which elements of the proposed action are planned. Chapter Five contains a listing of documents utilized in the preparation of this EA.

1.6 IMPLEMENTATION TIMEFRAME

The City of Albuquerque is prepared to close Runway 17-35 upon the receipt of approvals and clearances from the FAA. The timing for the closure will be dependent on these processes.

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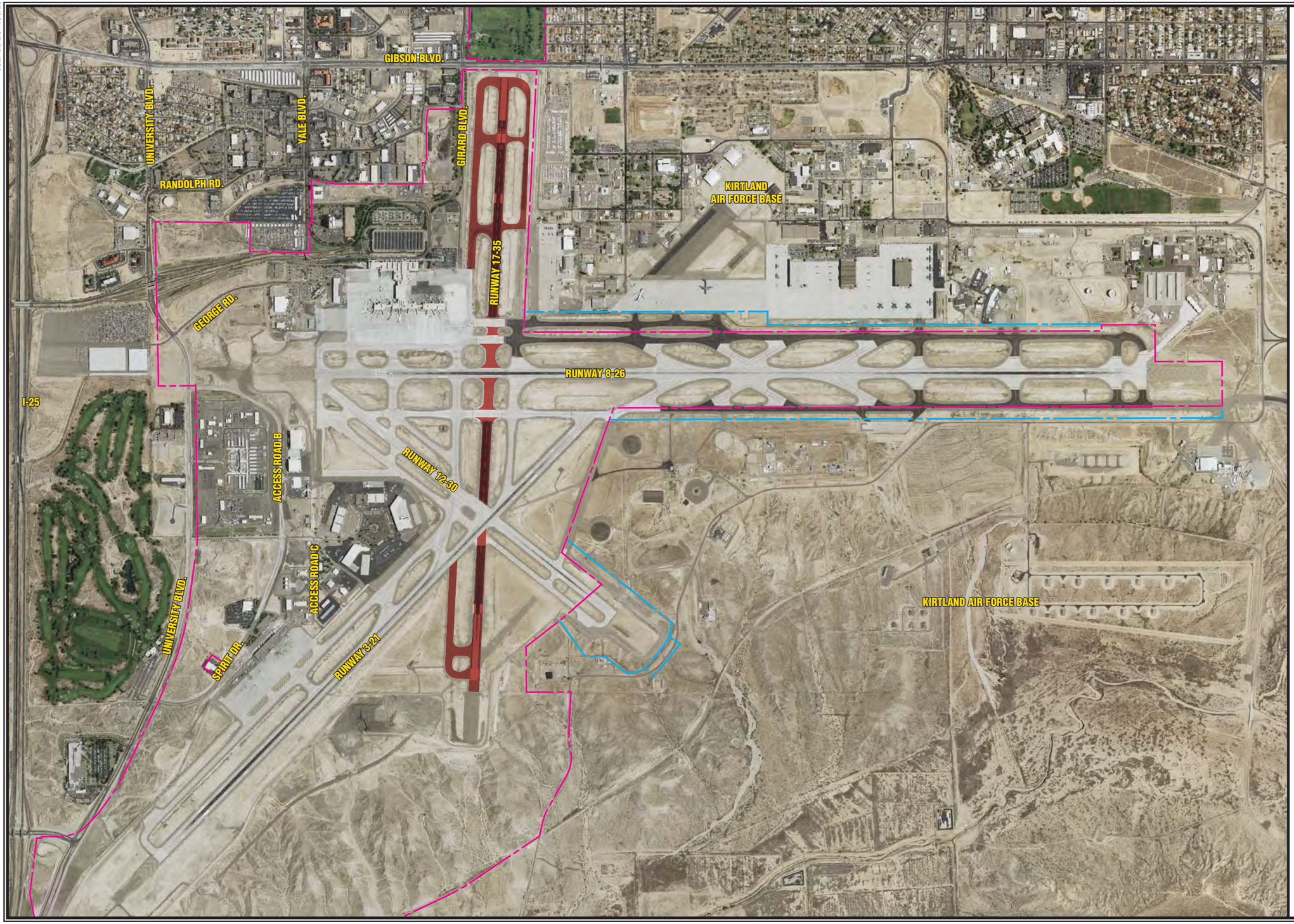


LEGEND

- Airport Property Line
- Lease Line
- Pavement to be Removed

NORTH

0 1,600

SCALE IN FEET

AERIALPHOTOGRAPHY
NAIP DATA: 2009

Exhibit 1C
PROPOSED ACTION

Chapter Two

ALTERNATIVES

Chapter Two
ALTERNATIVES

The objective of this alternatives analysis is to identify reasonable alternatives which accommodate the purpose and need identified in Chapter One. Once identified, each alternative is evaluated in terms of its ability to satisfy the objectives of the purpose and need for the project and its potential for an effect on the surrounding environment. The results of this evaluation determine which alternatives will be considered reasonable, thereby warranting further consideration.

Under the *National Environmental Policy Act* (NEPA) o*f 1969*, as stated in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Projects*, the FAA allows alternatives to be eliminated from further consideration when they do not fulfill the purpose and need for the action or cannot be reasonably implemented. In general, an alternative would be considered not reasonable if its cost would likely exceed the benefits or when the environmental consequences are excessive, particularly when compared to other alternatives which do meet the purpose and need. Alternatives that do not meet the purpose and need stated in Chapter One, or are deemed to be not reasonable, will be eliminated and will not be discussed further in this Environmental Assessment (EA), with the exception of the No Action Alternative. The Council on Environmental Quality (CEQ), NEPA regulations at 40 CFR 1502.14(d), requires the evaluation of the No Action Alternative, regardless of whether it meets the stated purpose and need or is reasonable to implement.

The *2003 Albuquerque International Sunport Airport Master Plan* re-evaluated the previous master plan's recommendation that Runway 17-35 be closed. A number of alternatives were considered including reconstructing the runway to 10,000 feet in length, reconstructing the runway to a length suitable to accommodate general aviation aircraft, and closing the runway.

The purpose of this chapter is to further examine those alternatives included in the master plan and determine whether they meet the purpose and need as stated in Chapter One. The following criteria will need to be considered for each alternative:

- **Airfield Safety**

Safety is the highest priority in aviation. The Aviation Demand Forecasts for Albuquerque International Sunport, which can be found in **Appendix B**, project total operations to grow by more than 50 percent between 2010 and 2030. This increase in activity will increase the potential for runway incursions at airfield "hot spots." It has been a high priority of the FAA to work with the airlines, airports, air traffic controllers, pilot unions, and aerospace manufacturers to create a safer runway environment. The alternatives considered for this environmental assessment have the same goal in mind. The impact of each alternative on the safety of the runway environment will take the highest priority of consideration.

- **Wind Coverage**

FAA Advisory Circular 150/5300-13, *Airport Design,* recommends that the airfield configuration should provide no less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for ARC A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; 16 knots (18 mph) for ARC A-III, B-III, and C-I through D-II; and 20 knots (23 mph) for ARC C-III through D-IV.

An updated wind analysis using the most recent ten-year period (2000-2009) of wind observations at Albuquerque International Sunport has been undertaken to evaluate each alternative's wind coverage. Each alternative considered must provide at least 95 percent wind coverage. Incremental improvements to coverage beyond 95 percent are also considered versus the incremental additional cost of facilities. The updated wind analysis can be found in **Appendix C**.

- **Airfield Capacity**

Airfield capacity can be generally defined by the airport's annual service volume (ASV). ASV is an annual level of service that accounts for differences in runway use, aircraft mix, weather conditions, and other conditions that would be encountered over a year's time. Each alternative must consider impacts to the overall ASV to determine whether the airfield system will be capable of accommodating long term aviation operational demands. An airfield capacity analysis can be found in **Appendix C**.

- **Benefit-Cost Effectiveness**

When considering any airport capital improvement project, an analysis of the costs and the benefits of the project are always considered prior to action being taken. This is done to mitigate the use of funds for projects providing a disproportionally small benefit. Cost discussion for each alternative should not be mistaken for a benefit-cost analysis study. It is provided simply to give perspective on the estimated cost of each alternative so it can be weighed by decision-makers.

2.1 ALTERNATIVES CONSIDERED BUT ELIMINATED

Due to the large number of alternatives, a detailed screening process was formulated. The following criteria were used in eliminating alternatives:

- Alternatives that do not improve the overall safety of the airfield environment were eliminated as they do not meet the stated project purpose and need.
- Alternatives that propose additional runway alignments since FAA wind coverage requirements are already being met and exceeded through the combination of Runways 8-26, 12-30, and 3-21.
- Alternatives that would significantly decrease airfield capacity and increase aircraft delay.

The following section summarizes the alternative eliminated from further consideration.

2.1.1 Alternative A – Reconstruct Runway 17-35 to 5,000 feet for general aviation use only

Depicted on the right side of **Exhibit 2A**, Alternative A proposes reconstructing Runway 17-35 to a length of 5,000 feet and a width of 75 feet. The reconstructed runway would be shifted to the south by 700 feet so that the ultimate Runway 17 threshold would not intersect with Runway 8-26. The runway would be constructed to a pavement strength rating of 12,500 pounds single wheel loading (SWL), which would accommodate small general aviation aircraft exclusively. Aircraft in this category are the primary users of the crosswind runways at Albuquerque International Sunport and include single-engine piston aircraft from a Cessna 172 up to turboprop aircraft such as the Beechcraft Super King Air 200.

At 5,000 feet, this runway length would meet the needs of the small general aviation aircraft that currently utilize Runway 17-35. This includes single-engine piston aircraft such as a Cessna 172 and smaller multi-engine piston aircraft.

Alternative A would slightly improve airfield capacity by 0.6 percent. Currently, due to the Letter of Agreement (LOA) described in Chapter One, this runway is utilized primarily by small general aviation aircraft weighing less than 12,500 pounds when winds dictate its use. Based on an analysis of wind conditions over the past 10 years, this translates to the runway being utilized approximately two percent of the time.

The airfield's all-weather wind coverage, with Runway 17-35 operational, exceeds 99 percent for 10.5-knot crosswinds as depicted on **Exhibit 2B.** Runway 17-35 provides the lowest single runway wind coverage of the four available orientations, with just 85.34 percent coverage for 10.5 knot crosswinds and 89.28 percent coverage for 13-knot crosswinds. These two crosswind coverage numbers are significant because the primary users of Runway 17-35 (small general aviation aircraft) are most impacted by these speeds. At the same time, Runway 17-35 and Runway 8-26 are the only two runways that provide at least 95 percent combined wind coverage at 10.5 knots.

From an airfield safety standpoint, Alternative A shifts Runway 17-35 to the south, eliminating the intersection of Runway 17-35 with Runway 8-26. This reduces runway incursion potential at this location as well as increases the altitude of the approach path for aircraft landing on Runway 17 over the neighborhoods north of the airport. This alternative does, however, maintain the intersection of Runway 17-35 with Runways 3-12 and 12-30. This multiple runway intersection has been identified by the FAA Runway Safety Action Team (RSAT) as a potential runway incursion "hot spot." While this alternative would

eliminate the physical intersection of Runways 8-26 and 17-35, it does not eliminate the more potentially hazardous multiple runway intersection. In fact, this airfield configuration could potentially increase runway incursion potential due to the lack of exit taxiways. Without an opportunity to exit the runway prior to entering the multi-runway intersection from the north and only one exit taxiway south of the intersection, almost all aircraft landing on Runway 17-35 would be required to either exit onto or pass through one of the other two intersecting runways. As a result, operations are essentially funneled into one of the most potentially hazardous and confusing locations on the airport.

This alternative was removed from further consideration as it does not meet the project purpose and need. It does not improve the overall safety of the airfield environment as runway incursion opportunities continue to be present.

2.1.2 Reconstruct Runway 17-35 to 5,000 feet for general aviation and military use only

An alternative to reconstruct Runway 17-35 to a length of 5,000 feet and a width of 150 feet was considered to meet the needs of military aircraft that currently utilize the runway. The location of the runway reconstruction would be identical to the location proposed in Alternative A. As it was discussed in Chapter One, an LOA allows the 58 Special Operations Wing (SOW) to conduct night-vision goggle (NVG) landing training to Runway 35. Aircraft used by the 58 SOW is primarily the Lockheed C-130 aircraft, which according to FAA Advisory Circular 150/5300-13 *Airport Design* requires a 150 foot wide runway and a pavement strength of 130,000 pounds single-tandem wheel loading (DTWL).

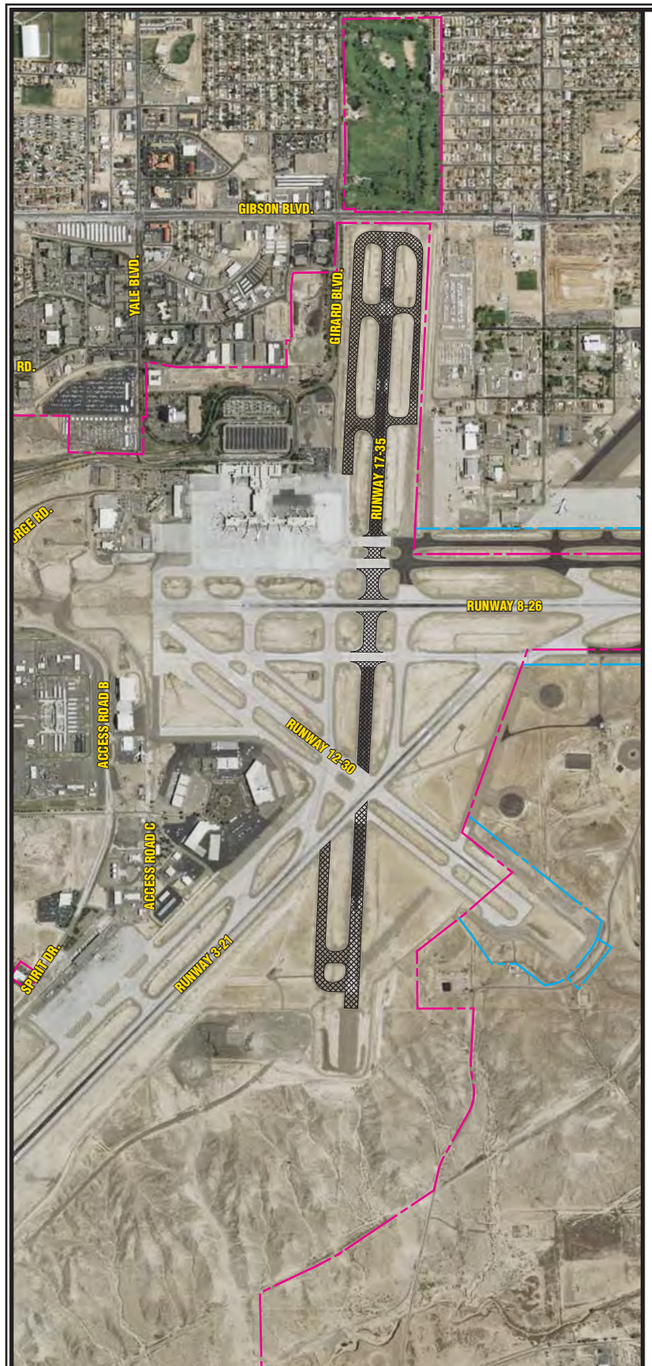
As was the case with Alternative A, this alternative would maintain the existing multiple runway intersection of Runway 17-35 with Runways 3-21 and 12-30. This location on the airfield is considered by the FAA to be a "hot spot" for runway incursions. Maintaining this intersection will have the same negative impacts to airfield safety detailed for Alternative A. Additionally, the 58 SOW has indicated that the ability of Runway 17-35 to meet their operational needs is declining due to the light pollution resulting from ongoing development south of the airport. As a result, the military is identifying and developing another site for its night-vision goggle training operations regardless of whether Runway 17-35 is closed is reconstructed.

This alternative was removed from further consideration as it does not meet the project purpose and need. It does not improve the overall safety of the airfield environment as runway incursion opportunities continue to be present.

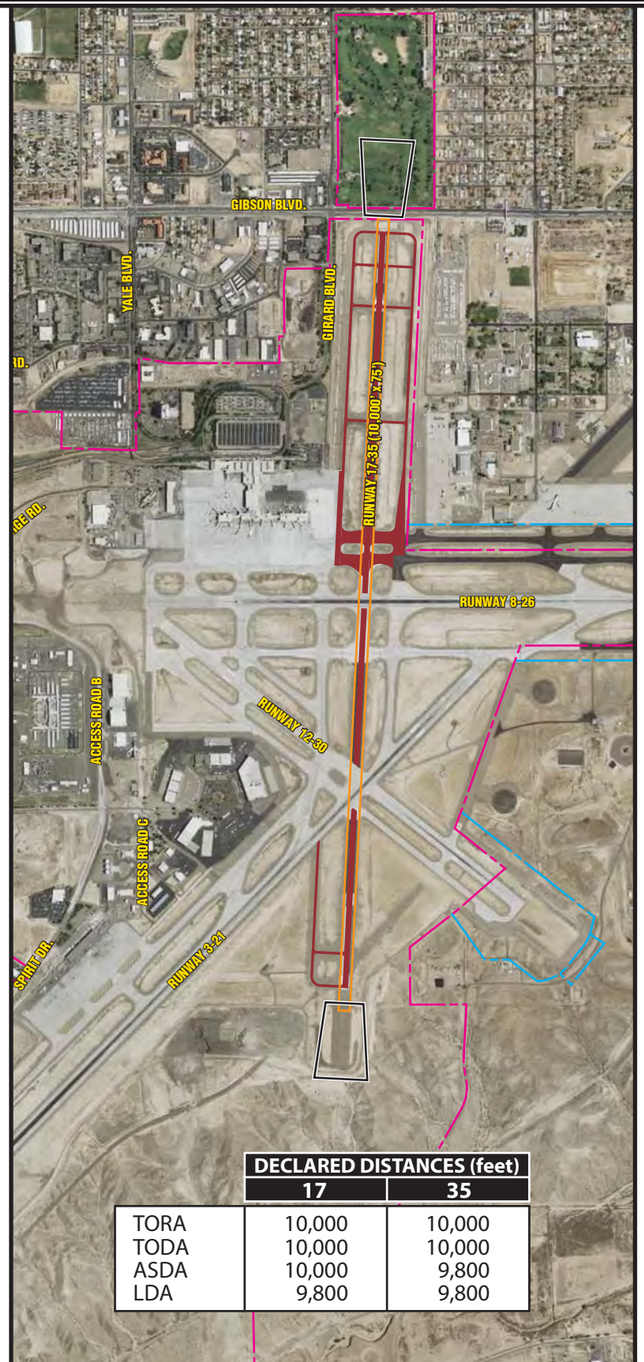
2.1.3 Reconstruct Runway 17-35 to 10,000 feet for commercial service operations

An alternative to reconstruct Runway 17-35 in its present location, to its current length and width, and to a pavement strength capable of accommodating commercial service aircraft was considered. Albuquerque International Sunport presently has two operable commercial service runways (8-26 and 3-21). Reconstructing Runway 17-35 as a third commercial service runway is difficult to justify. The commercial service operations that would utilize Runway 17-35 could easily occur on the other runways. It is only when both the other commercial service runways are down at the same time that a third runway would be needed. Since Runways 8-26 and 3-21 do not intersect, the chances of both runways being inoperable at the same time are significantly reduced. Runway 17-35, however, intersects with both runways, and subsequently can have a greater effect on the uninterrupted use of the other two.

08EA02-2A-10/12/10

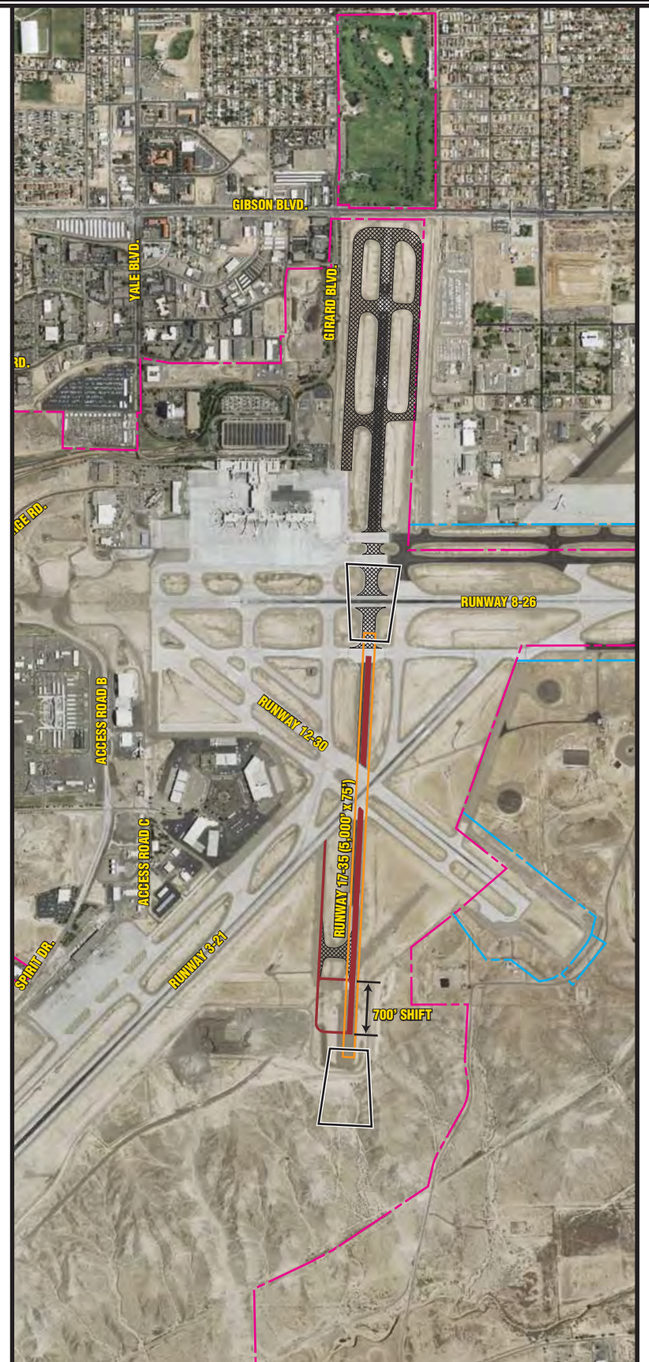


MASTER PLAN PROPOSED ACTION - Close Runway



DECLARED DISTANCES (feet)		
	17	35
TORA	10,000	10,000
TODA	10,000	10,000
ASDA	10,000	9,800
LDA	9,800	9,800

NO ACTION - Reconstruct Runway 17-35 to original length for general aviation aircraft 12,500# SWL and less



ALTERNATIVE A - General aviation use only. Reconstruct 5,000' x 75' 12,500# SWL pavement strength, ARC B-II

LEGEND

- Airport Property Line
- Lease Line
- Runway Safety Area (RSA)
- Runway Protection Zone (RPZ)
- Pavement to be Reconstructed
- Pavement to be Removed

DTWL - Dual-Tandem Wheel Loading
SWL - Single Wheel Loading
ARC - Airport Reference Code

NORTH

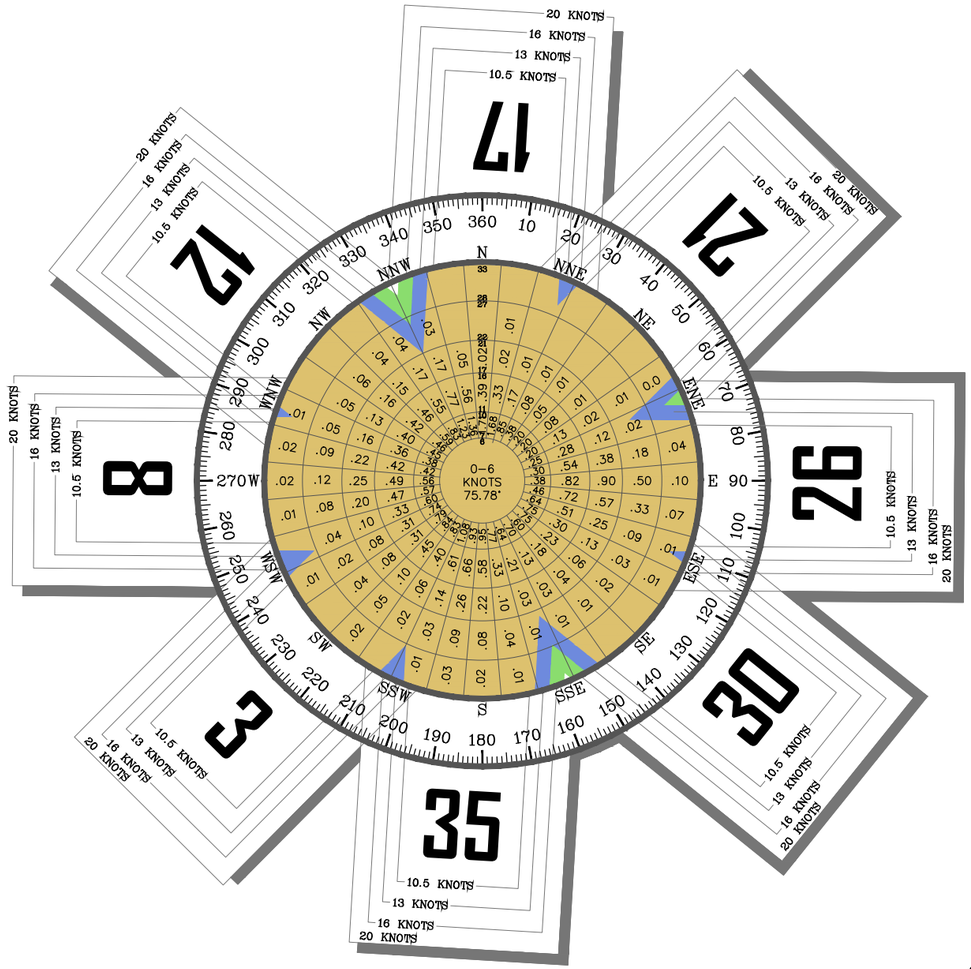
0 2,000
SCALE IN FEET

DATE OF PHOTO: 9-30-99

Exhibit 2A
ALTERNATIVES

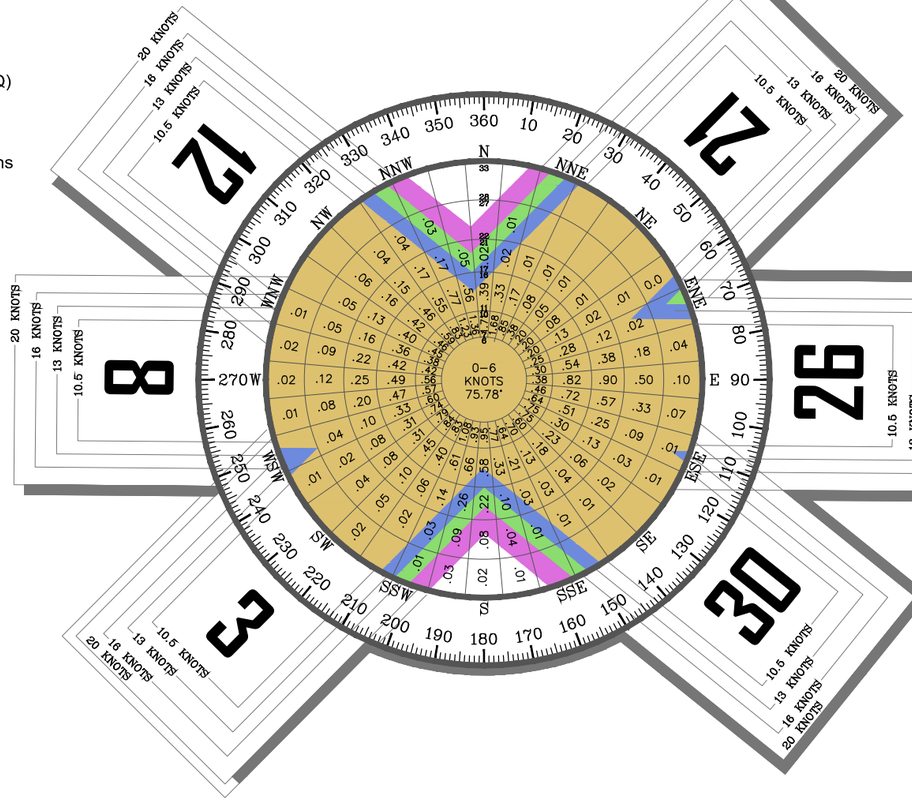
ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 3–21	85.15%	90.61%	95.69%	98.62%
Runway 8–26	90.01%	93.89%	97.70%	99.23%
Runway 12–30	88.28%	93.35%	97.42%	99.23%
Runway 17–35	85.34%	89.28%	93.39%	96.85%
Runway 8–26/3–21	94.73%	97.56%	99.17%	99.83%
Runway 8–26/12–30	94.82%	97.40%	99.03%	99.73%
Runway 8–26/17–35	98.37%	99.41%	99.85%	99.99%
Runway 8–26/3–21/12–30	98.43%	99.43%	99.82%	99.97%
Runway 8–26/3–21/12–30/17–35	99.96%	99.99%	100.00%	100.00%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Albuquerque International (ABQ)
Albuquerque, New Mexico

OBSERVATIONS:
79,880 All Weather Observations
2000-2009



Magnetic Declination
9° 18' East (August 2010)
Annual Rate of Change
00° 07' West (August 2010)

Exhibit 2B
ALL WEATHER WINDROSE

As with the previously discussed alternatives, maintaining Runway 17-35 in its present location and length does nothing to mitigate the runway incursion "hot spot." As a result, the overall safety of the airfield environment is not improved. In fact, operational safety could be lessened as larger commercial service aircraft would be utilizing three runways as opposed to two, which can increase runway incursion potential.

This alternative would likely increase the number of operations utilizing Runway 17-35, which would significantly decrease airfield capacity resulting in increased aircraft delay. This is due to the fact that the takeoffs and landings on Runway 17-35 cross all three of the other runways. Therefore, other aircraft operating from any of the other three runways must hold for the aircraft landing or departing on Runway 17-35.

This alternative does not meet the project purpose and need of providing a safe operating environment through reducing runway incursion potential; therefore, it will not be considered further within this EA.

2.1.4 Summary of Alternatives Considered but Eliminated During Initial Screening Process

Each of the three alternatives mentioned above were weighed against safety considerations, impacts to crosswind coverage, and impacts to overall airfield capacity. From a safety stand-point, each of the previous alternatives maintains, at a minimum, the multiple runway intersection that the FAA has identified as a "hot spot" for runway incursions. As a result, the overall safety of the airfield environment is not improved with the reconstruction of Runway 17-35.

From a wind coverage standpoint, maintaining Runway 17-35 at any length and width improves the 10.5-knot crosswind coverage by only 1.53 percent. This is a minimal impact and the resulting airfield coverage with Runway 17-35 closed still surpasses the FAA's 95 percent wind coverage requirement by 3.43 percent.

Airfield capacity is improved by only 0.6 percent with the reconstruction of Runway 17-35. The alternative that proposes reconstruction of Runway 17-35 for commercial service aircraft reduces overall capacity and increases aircraft delay.

The cost to reconstruct Runway 17-35 ranges between $11.4 million (5,000 feet by 75 feet) to $43.6 million (10,000 feet by 150 feet). The minimal to negative impacts to airfield capacity, airfield safety considerations, combined with the high cost to reconstruct, makes it difficult to justify.

For these reasons, and the reasons stated previously, these alternatives will not be considered further within this EA as they do not meet the stated project purpose and need.

2.2 ALTERNATIVES GIVEN FURTHER CONSIDERATION WITHIN THIS EA

2.2.1 Sponsor-Proposed Action Alternative

Depicted on the left side of **Exhibit 2A**, the Sponsor-Proposed Action Alternative involves removing the Runway 17-35 pavement and portions of taxiway pavement that lead to the Runway 17-35 thresholds.

As it was stated earlier, Runway 17-35 provides the least amount of overall wind coverage according to the updated wind data analysis. The airfield's 10.5-knot crosswind coverage drops only 1.53 percent to 98.43 percent without Runway 17-35 included. This decline in wind coverage for 10.5-knot crosswinds would has resulted in a reduction of approximately 484 total operations for the previous 12 months ending July 2010 by small single-engine and multi-engine piston aircraft. The 13-knot crosswind coverage would drop by 0.56 percent to 99.43 percent without Runway 17-35, which would have resulted in a reduction of approximately 117 total operations by small- to medium-sized business jet aircraft. The reduction in the 16- and 20-knot crosswind coverage would impact 183 total operations by large commercial service aircraft. In total, the closure of Runway 17-35 would have displaced 784 total operations for the previous 12 months ending July 2010, or 0.5 percent of total operations. Thus, it is evident that the closure of Runway 17-35 would not impact the airfield's ability to meet the FAA's 95 percent coverage requirement nor would it impact, to a significant level, operational activities.

The airfield capacity analysis in **Appendix C** concluded that the Sponsor-Proposed Action Alternative of closing Runway 17-35 will have minimal impact on airfield capacity, reducing the ASV only 0.6 percent. The resulting 2030 ASV level after removal of Runway 17-35 would be 323,158, which is well above the projected operational forecast of 255,000. Computer modeling of potential delays had similar results. Therefore, the Sponsor-Proposed Action Alternative meets the purpose of the airfield system to meet long term capacity demand.

Runway 17-35 intersects with each of the other three runways and at one point creates a multiple runway intersection. This point on the airfield is classified by the FAA as a "hot spot" for runway incursion potential. It has been a high priority of the FAA to reduce the number of runway incursions occurring at airports throughout the United States. While runway incursion risk cannot be eliminated entirely, closing Runway 17-35 would serve to reduce the potential for runway incursions at this point on the airfield. As a result, the Sponsor-Proposed Action Alternative would improve the overall safety of the airfield environment.

Environmental impacts resulting from implementation of this alternative include the following:

- Short term noise and air quality impacts during removal of Runway 17-35 pavement.

Statutory or regulatory requirements applicable to this alternative include the following:

- Acquisition of a construction-related NPDES permit.
- Modification of the airport's existing operation-related NPDES permit.

The cost of the Sponsor-Proposed Action Alternative is estimated at $4.2 million. This alternative fully meets the stated project purpose and need as it improves the overall safety of the airfield environment, maintains adequate capacity to meet long term aviation demand, and meets the FAA 95 percent crosswind requirement. Therefore, it will be carried forward for further evaluation within this EA as the Sponsor-Proposed Action Alternative.

2.2.2 No Action Alternative

The No Action Alternative considers reconstructing Runway 17-35 to its original length of 10,000 feet to be used exclusively by general aviation aircraft weighing 12,500 pounds or less. This alternative would maintain a 200-foot displaced Runway 17 threshold. As a result, declared distances would be employed.

Declared distances are used by the FAA to define the effective runway length for landing and takeoff when a displaced threshold is involved. The four types of declared distances, as defined in FAA AC 150/530-13, *Airport Design,* are as follows:

Takeoff Run Available (TORA) – The runway length declared available and suitable for the ground run of an airplane taking off. This declared distance reflects the length of pavement that can handle the weight of an aircraft. It does not take into consideration runway safety area (RSA) recommendations.

Takeoff Distance Available (TODA) – The TORA plus the length of any remaining runway and/or clearway beyond the far end of the TORA at which the airplane can clear a 50-foot obstacle.

Accelerate-Stop Distance Available (ASDA) – The runway declared available for the acceleration and deceleration of an aircraft aborting a takeoff. ASDA takes into consideration RSA standards, thereby improving safety margins for users.

Landing Distance Available (LDA) – The runway length declared available and suitable for landing taking into account the RSA standard.

TORA and TODA for Runway 17-35 would be equal to the actual pavement length and do not take into consideration the RSA. The more critical of the declared distances are ASDA and LDA as these lengths take into account the RSA.

ASDA is equal to the balance field length calculated by pilots prior to takeoff. The ASDA, or balanced field length, considers the runway length required by an aircraft to accelerate to rotation speed and then decelerate safely on the remaining runway available. This is the controlling takeoff distance and is used for evaluating if sufficient takeoff distance is provided.

LDA considers the runway length necessary for an aircraft to touch down and decelerate to a safe speed prior to exiting the runway, while allowing for appropriate safety areas at each end of the runway to safely accommodate an aircraft that may undershoot or overshoot the runway. **ASDA and LDA take into account the RSA and reduce takeoff and landing distances to reflect approach or departure RSA.** The resultant runway lengths available for takeoff and landing with implementation of declared distances within the No Action Alternative are depicted on **Exhibit 2A**.

The No Action Alternative meets the long term capacity demand at Albuquerque International Sunport and meets the FAA's 95 percent crosswind requirement. However, this alternative maintains the airfield essentially "as-is" without any mitigation of the runway incursion "hot spot." For this reason, the No Action Alternative does not meet the identified purpose and need for the facility. While the No Action Alternative does not meet the purpose and need, in accordance with CEQ NEPA regulations at 40 CFR 1502.14, it is further analyzed with regard to its potential environmental impact in Chapter Four of this environmental document.

2.3 ALTERNATIVES SUMMARY

Runway 17-35 provides the airport very limited additional capability. Commercial and military aircraft based at Kirtland Air Force Base primarily utilize Runway 8-26 and use Runway 3-21 as a secondary runway. It has been indicated by military personnel that should Runway 17-35 be closed, the military aircraft mission that sometimes uses that runway would be capable of utilizing Runway 12-30 in its place. General aviation aircraft are capable of utilizing Runways 8-26, 3-21, and 12-30 and use Runway 17-35

as a third backup primarily in extreme wind conditions. If Runway 17-35 were to be closed, Double Eagle II Airport, located only 11 nautical miles west of Albuquerque International Sunport, is equipped with a north-south runway that could accommodate those small general aviation aircraft that, on rare occasions, when the wind would not allow use of one of the other three runways at Albuquerque International Sunport.

The following bullets summarize the key considerations in this alternative's analysis.

- **Safety:** Runway 17-35 intersects all three other runways and increases the potential for runway incursions. The FAA has identified one of these intersections as an incursion "hot spot." Closing Runway 17-35 reduces the potential for runway incursions, improving the overall safety of the airfield environment.

- **Wind Coverage:** Runway 17-35 is utilized for only two percent of annual operations and only approximately 0.5 percent of annual operations would not be able to use one of the other runways if it closed. Overall, airfield wind coverage at Albuquerque International Sunport without Runway 17-35 exceeds the FAA's 95 percent wind coverage requirement by 3.43 percent. Double Eagle II Airport's north-south runway can be utilized in those extreme crosswind conditions.

- **Airfield Capacity:** Runway 17-35 improves airfield capacity by only 0.6 percent. If operations on Runway 17-35 increased to levels above current use, airfield capacity would be diminished. If Runway 17-35 were to be closed, the remaining runway configuration would be capable of meeting projected long term operational demand.

- **Costs:** Reconstruction of Runway 17-35 is estimated to cost between $11.4 million and $43.6 million. The minimal benefits of repairing and maintaining this runway will not survive a benefit-cost analysis. The removal of the runway is estimated to cost $4.2 million.

- **Other Considerations:** The closure of Runway 17-35 will eliminate the approach path that directly overflies residential neighborhoods north of the airport. In addition, airport lands will be made available for future landside developments.

Chapter Three

AFFECTED ENVIRONMENT

Chapter Three
AFFECTED ENVIRONMENT

The purpose of this chapter is to identify or highlight any important background information that describes the existing environment at Albuquerque International Sunport.

3.1 AIRPORT BACKGROUND AND FACILITIES

Albuquerque International Sunport is located in Bernalillo County in central New Mexico, as shown on Exhibit 1A. Approximately, four miles south of the central business district, the airport is owned and operated by the City of Albuquerque and is a joint use facility with Kirtland Air Force Base.

Facilities at an airport can be divided into two distinct categories: airside facilities and landside facilities. Airside facilities include those directly associated with aircraft operation. Landside facilities include those necessary to provide an interface between surface and air transportation, as well as support aircraft servicing, storage, maintenance, and operational safety.

3.1.1 Airside Facilities

Airside facilities generally include, but are not limited to, runways, taxiways, connecting taxiways, airfield lighting, and navigational aids. As indicated in **Table 3A** and depicted on Exhibit 1B, Albuquerque International Sunport has four runways. The longest runway, Runway 8-26 is 13,793 feet long and 150 feet wide and constructed of grooved concrete. Runways 3-21 and 17-35 are each 10,000 feet long and 150 feet wide and are constructed of grooved concrete and grooved concrete and asphalt respectively. Runway 12-30 is 6,000 feet long and 150 feet wide and is constructed of grooved concrete. Runways 8-26, 3-21, and 12-30 are in good condition while Runway 17-35 is in poor condition. In addition to the

runways, there is also an extensive taxiway system to provide access to the various facilities at the airport. **Table 3A** summarizes the basic runway data.

TABLE 3A
Airfield Facility Data

	Runway 8-26	Runway 3-21	Runway 12-30	Runway 17-35
Runway Length (feet)	13,793	10,000	6,000	10,000
Runway Width (feet)	150	150	150	150
Runway Surface				
Surface Material	Concrete	Concrete	Concrete	Asphalt/Concrete
Surface Treatment	Grooved	Grooved	Grooved	Grooved
Condition	Good	Good	Good	Poor
Load Bearing Strength (lbs.)				
Single Wheel Loading	100,000	100,000	65,000	12,500[1]
Dual Wheel	210,000	210,000	120,000	N/A
Dual Tandem Wheel	360,000	360,000	155,000	N/A
Double Dual Tandem Wheel	720,000	720,000	N/A	N/A
Airfield Lighting	HIRL	HIRL	MIRL	MIRL
Approach Aids	MALSR (8) VASI-6 (8, 26) REIL (26)	MALSR (3) PAPI-4 (3, 21)	PAPI-4 (30) REIL (30)	VASI-4 (17, 35) REIL (17, 35)
Traffic Pattern	Right (8) Left (26)	Right (3) Left (21)	Right (12) Left (30)	Right (17) Left (35)
Instrument Approach Procedures	ILS (8) RNAV GPS (8) VOR or TACAN (8)	ILS (3) RNAV GPS (3)	N/A	RNAV GPS (17) RNAV GPS (35)
Displaced Threshold	1,000 (8)	N/A	N/A	890 (17)
Airport Elevation	5,355'			

MALSR	Medium Intensity Approach Light System with Runway Alignment Indicator Lights
PAPI	Precision Approach Path Indicator
ILS	Instrument Landing System
VASI	Visual Approach Slope Indicator Lights
REIL	Runway End Identifier Lights
GPS	Global Positioning System
TACAN	Tactical Air Navigation
VOR	Very High Frequency Omni-directional Range
HIRL	High intensity runway lighting
MIRL	Medium intensity runway lighting
RNAV	Area navigation

Source: *Airport/Facility Directory*, U.S. Department of Transportation, August 2009
[1] Runway 17-35 is limited to use by aircraft weighing 12,500 pounds or less regardless of wind conditions per letters of agreement with the airport traffic control tower with the exception of certain military operations.

3.1.2 Landside Facilities

Landside facilities are essential to the daily operation of the airport and consist primarily of those facilities required to accommodate aircraft, pilots, and passengers while they are at the airport.

Three fixed base operators, each providing a wide range of aviation-related services are located at Albuquerque International Sunport. The current fixed base operators include Atlantic Aviation, Bode Aviation and Cutter Aviation. Fuel, avionics repair, aircraft maintenance, flight instruction, aircraft rental,

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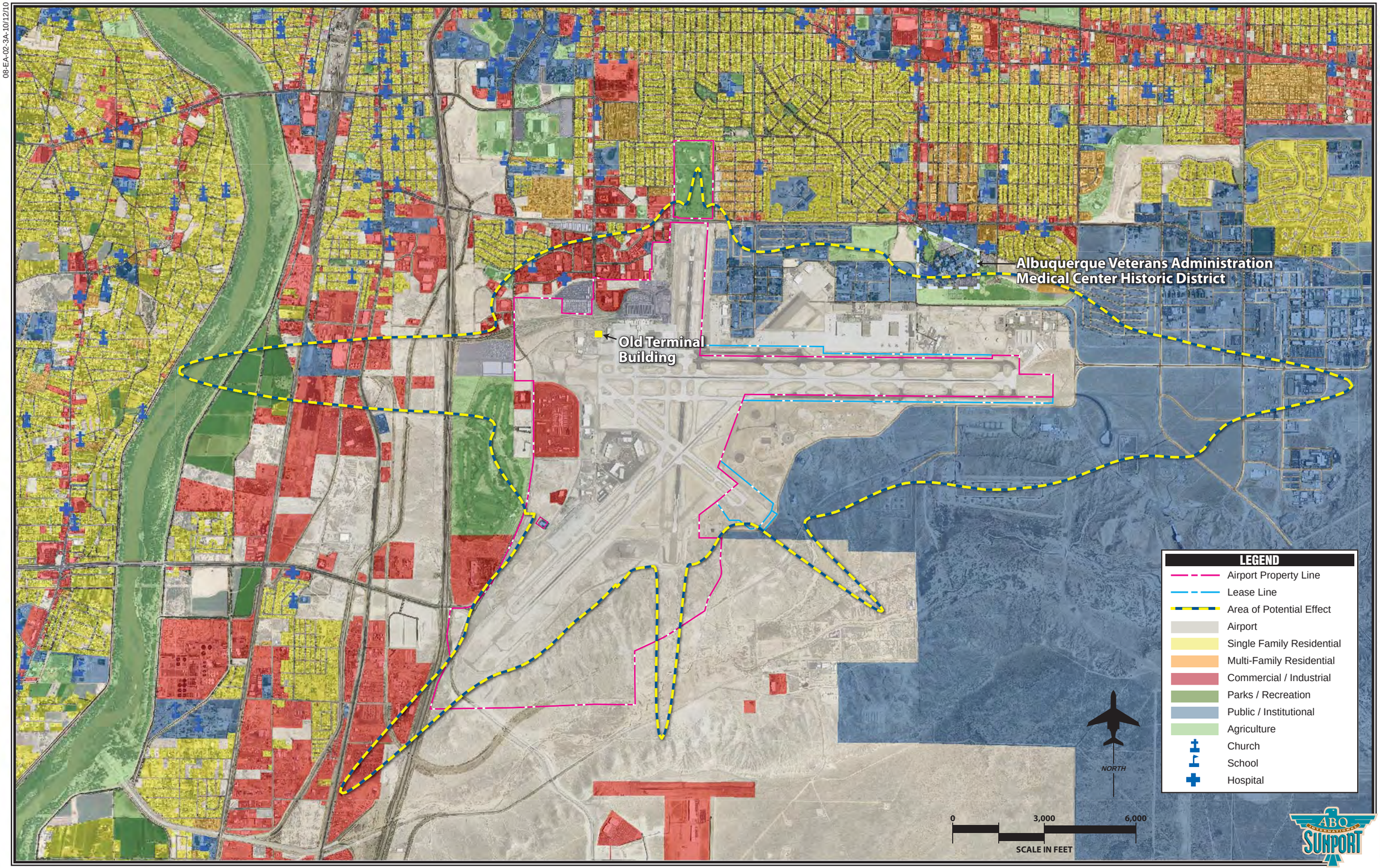


Exhibit 3A
AREA OF POTENTIAL EFFECT
AND LAND USE

aircraft charter and aircraft parking services are available from these tenants. Additionally, the airport has an aircraft rescue and firefighting station located on site to provide fire suppression services in case of emergency.

3.2 LAND USE

- **Generalized Land Use**

As previously stated, Albuquerque International Sunport is co-located with Kirtland Air Force Base. Combined, these two facilities encompass approximately 55,000 acres on the southeast side of the City of Albuquerque. Of the total acreage, the Sunport utilizes approximately 2,000 acres. The remaining portion of the base, located southeast of the airport is largely undeveloped with scattered military structures. As indicated on **Exhibit 3A**, a City of Albuquerque owned golf course is located immediately north of the airport as are several residential neighborhoods and a number of public and private grade schools and parks. Much of the area immediately northeast and east of the airport facilities is developed with Kirtland Air Force Base facilities including administration buildings, training facilities, and base housing. Two medical facilities are surrounded by base facilities including the Albuquerque Veteran's Administration Medical Center, which is a registered historic district and the Lovelace Healthcare Center. The Old Airport Terminal building located west of the current passenger terminal building is also a registered historical building.

The areas northwest and west of the airport are developed with industrial, commercial, office, and airport-support (hotels, long term parking, car rental facilities) and residential land uses. Southwest of the airport is the Championship Golf Course at the University of New Mexico, beyond which is Interstate 25. Much of the area south of the airport is undeveloped, with the exception of the Albuquerque International Dragway, Journal Pavilion amphitheatre, and scattered industrial/office uses in the Mesa del Sol planned development. The unincorporated Isleta Pueblo community is located south of the Mesa del Sol development approximately 13 miles from the airport.

- **Future Land Use**

Much of the area north, east and west of the airport is fully developed. Future land uses in these areas will likely mirror existing. Immediately south of the airport a large development is planned. The Mesa del Sol community, located immediately south of Albuquerque International Sunport on approximately 12,900 acres, is planned to include residential, commercial, and industrial land uses. The Mesa del Sol project is a joint venture between Forest City Enterprises and Covington Capital in conjunction with the New Mexico State Land Office, the University of New Mexico, the City of Albuquerque, Bernalillo County and the State of New Mexico. As shown on **Exhibit 3B**, the master planned community is bound on the north by the Tijeras Arroyo, on the east by Kirtland Air Force Base, on the south by the Isleta Pueblo and on the west by Broadway Boulevard. At build-out, the community is planned to house 100,000 residents and provide 18 million square feet of office, industrial and retail space. Numerous schools and educational facilities are also planned.

- **On-Airport Land Use**

As a part of the update to the Airport Layout Plan (ALP) during the previous master plan update process in 2003, on-airport land uses were planned. Since the master plan called for the closure of Runway 17-35, the northern portion of the runway would be available for landside developments. As depicted on

Exhibit 3C, the master plan proposed the expansion of passenger terminal facilities to this area. The southern portion of Runway 17-35 was planned for airport commercial support uses, while the remaining portions of the runway would be located within the airfield operations area. Airport commercial support uses consist of industrial or commercial activities that require, or are attracted to, an airport location providing additional employment opportunities and revenue support for the airport.

3.3 EXISTING ENVIRONMENT

This section provides background information on the existing natural and cultural environment within and surrounding Albuquerque International Sunport. Sources of this information include coordination received from various resource agencies (copies contained within Appendix A), previous environmental documentation prepared for the airport and internet research.

Environmental resources (as described within Appendix A of FAA Order 1050.1E), which are not located within the project area include: Coastal Resources; Farmlands; and Wild and Scenic Rivers.

3.3.1 Natural Resources

- **WETLANDS**

The U.S. Fish and Wildlife Service's National Wetlands Inventory indicates that there are no wetlands located on the Albuquerque International Sunport property. Further investigation of soil types at the airport also indicated the absence of wetlands. In general, wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils. A review of the Natural Resource Conservation Service's Web Soil Survey indicates that no hydric soils are located on airport property.[1]

- **WATER QUALITY AND WATERS OF THE U.S.**

The U.S. Army Corps of Engineers reviews airport improvement projects in accordance with Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899 (RHA). A letter from the Department of the Army Albuquerque District, Corps of Engineers dated August 14, 2009, states that the project will not require Department of the Army authorization. This letter can be found in **Appendix A**.

According to the New Mexico Environment Department (NMED), Surface Water Quality Bureau website, the proposed project area does not contain any waters listed in the *Clean Water Act,* Section 303(d) list (Impaired Waters List).

The only water supply source to the project area is the Santa Fe Group Aquifer. In 2002, the NMED conducted a Source Water Assessment to determine how susceptible the Santa Fe Group aquifer wells are to contamination. NMED concluded that the wells are well-maintained and operated, and are generally protected from potential sources of contamination. Wells near known contamination sites are ranked highly susceptible to contamination. Potential sources of contamination include businesses that use

[1] NRCS web soil survey, http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed September 2009

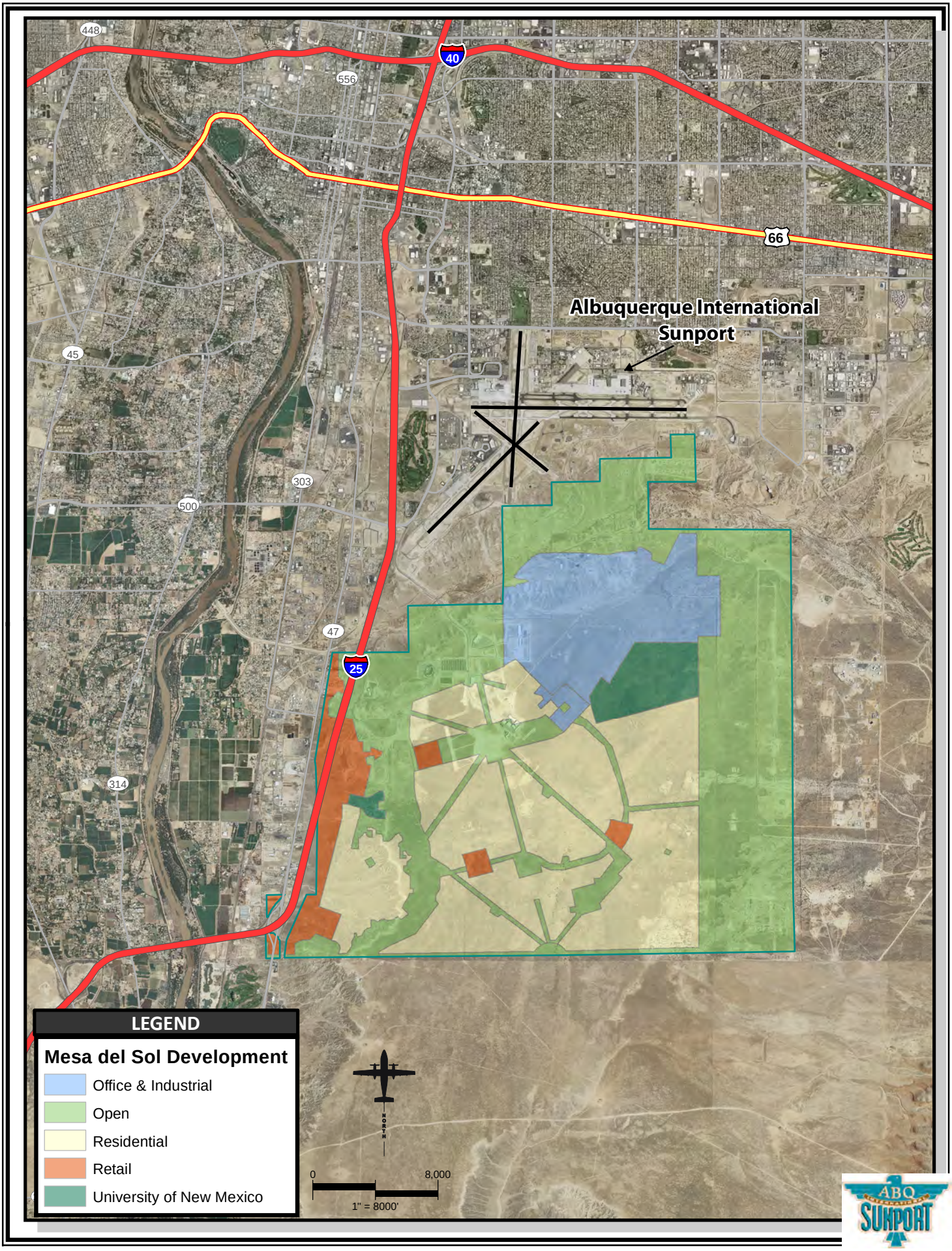
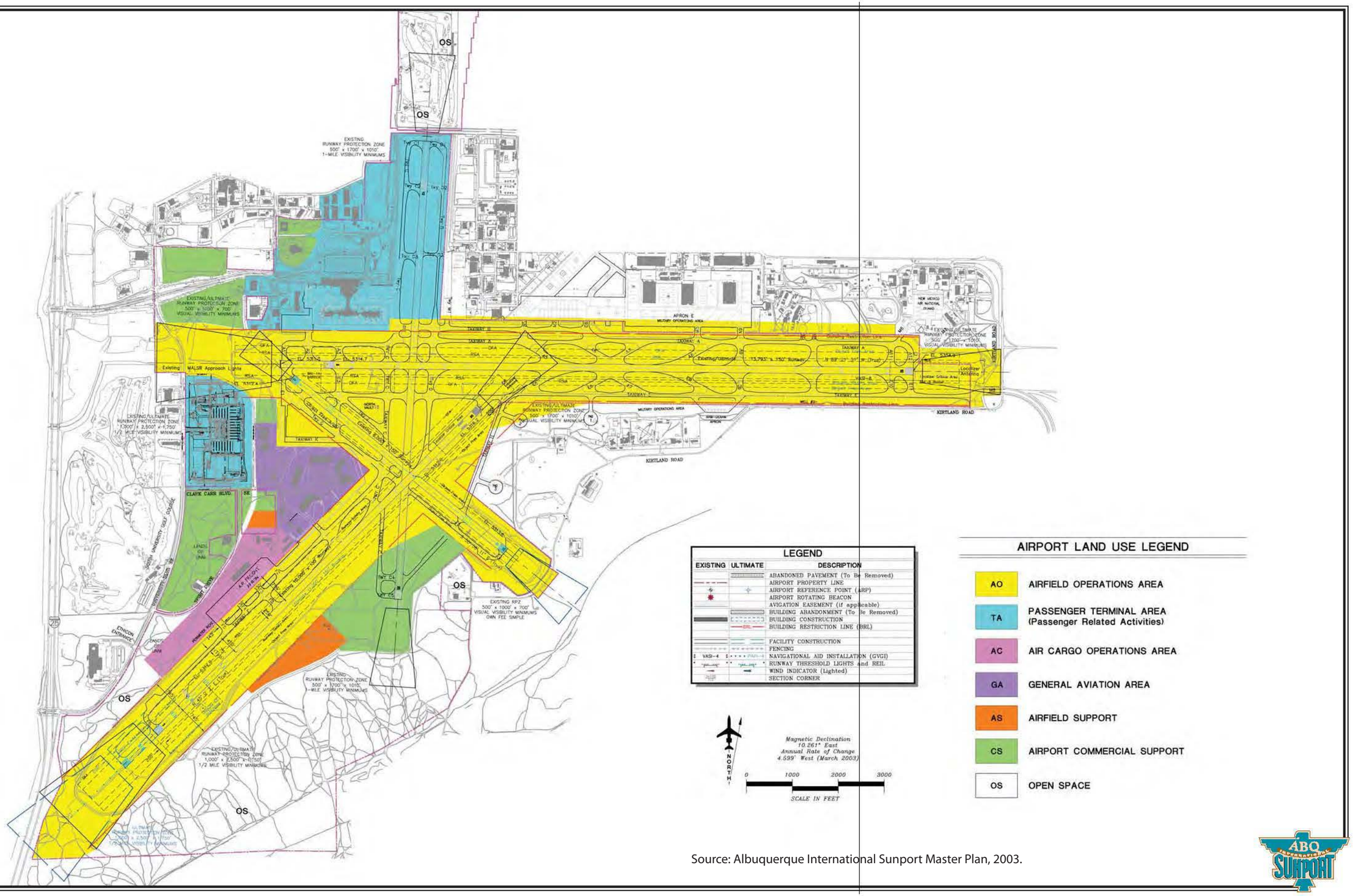


Exhibit 3B
MESA DEL SOL DEVELOPMENT PLAN

08-EA-02-3D-9/2/10



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (If applicable)
		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		FACILITY CONSTRUCTION
		FENCING
VASI-4		NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		WIND INDICATOR (Lighted)
		SECTION CORNER

NORTH

Magnetic Declination
10.261° East
Annual Rate of Change
4.599' West (March 2003)

0 1000 2000 3000

SCALE IN FEET

AIRPORT LAND USE LEGEND

AO	AIRFIELD OPERATIONS AREA
TA	PASSENGER TERMINAL AREA (Passenger Related Activities)
AC	AIR CARGO OPERATIONS AREA
GA	GENERAL AVIATION AREA
AS	AIRFIELD SUPPORT
CS	AIRPORT COMMERCIAL SUPPORT
OS	OPEN SPACE

Source: Albuquerque International Sunport Master Plan, 2003.

Exhibit 3C
ON-AIRPORT LAND USE

hazardous chemicals such as automotive repair shops, gas stations, dry cleaners, paint and hardware stores, car washes, construction sites, golf courses, interstate highways and city streets, military facilities, sewer lines and septic tanks, and unlined arroyos, ditches, and drainage canals.

The Albuquerque area is using water obtained through the San Juan-Chama Drinking Water Project. This project diverts San Juan-Chama river water to a new, state-of-the-art water treatment plant north of Albuquerque. The finished water is distributed to customers for drinking water and is blended with ground water supplies during the summer or in times of drought.

- **FISH, WILDLIFE, AND PLANTS**

Based on federally listed species lists obtained from the U.S. Fish and Wildlife Service a total of six special-status species, listed in **Table 3B,** have known occurrences in Bernalillo County. Based on a review of the existing vegetative communities, soils and topography of the proposed project areas, suitable conditions for none of the threatened species are present within airport property.

TABLE 3B
Federally Listed Threatened and Endangered Species
Bernalillo County, New Mexico

Common Name	Habitat	Federal Status
Bald eagle	Nesting sites are usually isolated, located high in trees or on cliffs that are close to water.	Threatened
Black-footed Ferret	Black-footed ferrets require prairie dog burrows for shelter. Prairie dogs use prairie and grassland habitat ranging from the mid-west to the western United States. They are considered a key indicator species for the health of prairie and grassland habitat.	Endangered
Mexican spotted Owl	Found in mature, montane forests and woodlands and steep, shady, wooded canyons. Can also be found in mixed-conifer and pine-oak vegetation types. Generally nests in older forests of mixed conifers or ponderosa pine–Gambel oak. Nests in live trees on natural platforms (e.g., dwarf mistletoe brooms), snags, and canyon walls at elevations between 4,100 and 9,000 feet msl.	Threatened
Rio Grande silvery minnow	The silvery minnow critical habitat designation in the Rio Grande extends from Cochiti Dam, Sandoval County, New Mexico (NM) downstream to the utility line crossing the Rio Grande, a permanent identified landmark in Socorro County, NM, a total of approximately 157 miles.	Endangered
Southwestern willow flycatcher	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder, saltcedar, Russian olive, buttonbush, and arrowweed are present. Habitat occurs at elevations below 8,500 feet msl.	Endangered
Yellow-billed Cuckoo	Typically found in riparian woodland vegetation (cottonwood, willow, or saltcedar) at elevations below 6,600 feet msl. Dense understory foliage appears to be an important factor in nest site selection.	Candidate

The State of New Mexico Department of Game and Fish have identified 38 species considered sensitive, threatened and endangered that occur in Bernalillo County. These species are listed in **Table 3C**. Habitat for species such as the Gunnison's prairie dog and the Western Burrowing Owl is present within the project area.

SWCA Environmental Consultants is currently under contract to conduct monthly wildlife hazard assessments at Albuquerque International Sunport. In its most recent survey conducted in September 2011, SWCA observed active Gunnnison's prairie dog burrows as well as several burrows being used by Western Burrowing Owls in the airport operations area. It was recommended that the airport continue to implement the approved Wildlife Hazard Management Plan (WHMP) for the Sunport, dated June 12, 2009.

TABLE 3C
New Mexico Wildlife of Concern
Bernalillo County, New Mexico

Common Name	Status	Anticipated Project Effects to Wildlife or Sensitive Habitats
Rio Grande Chub	Sensitive	No effect
Rio Grande Silvery Minnow	Endangered	No effect
Brown Pelican	Endangered	No effect
Neotropic Cormorant	Threatened	No effect
Bald Eagle	Threatened	No effect
Northern Goshawk	Sensitive	No effect
Common Black-Hawk	Threatened	No effect
Aplomado Falcon	Endangered	No effect
Peregrine Falcon	Threatened	No effect
Mountain Plover	Sensitive	No effect
Black Tern	N/S	No effect
Yellow-billed Cuckoo	Sensitive	No effect
Mexican Spotted Owl	Sensitive	No effect
Burrowing Owl	N/S	No effect
Black Swift	Sensitive	No effect
Broad-billed Hummingbird	Threatened	No effect
White-eared Hummingbird	Threatened	No effect
Southwestern Willow Flycatcher	Endangered	No effect
Loggerhead Shrike	Sensitive	No effect
Bell's Vireo	Threatened	No effect
Gray Vireo	Threatened	No effect
Baird's Sparrow	Threatened	No effect
Western Small-footed Myotis Bat	Sensitive	No effect
Yuma Myotis Bat	Sensitive	No effect
Occult Little Brown Myotis Bat	Sensitive	No effect
Long-legged Myotis Bat	Sensitive	No effect
Fringed Myotis Bat	Sensitive	No effect
Spotted Bat	Threatened	No effect
Pale Townsend's Big-eared Bat	Sensitive	No effect
Big Free-tailed Bat	Sensitive	No effect
Gunnison's Prairie Dog	Sensitive	No effect
New Mexican Jumping Mouse	Endangered	No effect
Red Fox	Sensitive	No effect
Ringtail	Sensitive	No effect
Black-footed Ferret	N/S	No effect
Western Spotted Skunk	Sensitive	No effect
Socorro Mountainsnail	Sensitive	No effect
Slate Millipede	N/S	No effect
N/S – Not Specified		

- **AIR QUALITY**

Albuquerque International Sunport is located in Bernalillo County, which is an attainment area for all federal criteria pollutants as defined by the U.S. Environmental Protection Agency[2].

The *Clean Air Act* requires all states to establish a network of air monitoring stations for criteria pollutants. The State and Local Air Monitoring Stations (SLAMS) network includes monitors located throughout the United States in accordance with guidance provided by the Environmental Protection Agency's Office of Air Quality Planning and Standards. Two air quality monitors, Site 2ZV and Site 2ZN,are operated and maintained by the City of Albuquerque Environmental Health-Air Quality Division. Site 2ZV is located approximately 3.2 miles southwest of the airport reference point and Site 2ZN is located approximately 2.3 miles northeast of the airport reference point.[3] Site 2ZN monitors ozone (O_3) and fine particulate matter (PM2.5). Site 2ZV monitors O_3, PM2.5, carbon monoxide (CO), and coarse particulate matter (PM10). Based on the most recent AirData report from EPA, which includes data collected in 2008, neither of these monitoring sites recorded any exceedances for the monitored pollutants.

Additionally, the City of Albuquerque Environmental Health-Air Quality Division, administers the Fugitive Dust Control Program in accordance with the Albuquerque-Bernalillo County Air Quality Control Board regulation 20.11.20 of the New Mexico Administrative Code which requires a Fugitive Dust Control Construction Permit for projects which include land disturbance of more than three quarters of an acre.

- **FLOODPLAINS**

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains.

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 35001C0361G indicates that no 100-year flood plains are present on airport property; however, a floodplain associated with Tijeras wash is located immediately south of the airport.

3.3.2 Department of Transportation Section 4(f) Properties

49 USC Section 303(c), also known as Section 4(f), requires evaluation of any possible impacts to publicly owned parks, recreational areas, wildlife/waterfowl refuges and historic sites of national, state, or local significance.

As depicted on **Exhibit 3A**, there are several public parks and golf courses located within the vicinity of Albuquerque International Sunport. These properties include the City of Albuquerque owned Puerto Del Sol Golf Course north of Runway 17-35, the University of New Mexico South Golf Course immediately west of the airfield, and Morris Field and USS Bullhead Memorial Park located immediately north of Kirtland Air Force Base facilities. Numerous smaller public parks are located further to the north of the airport.

[2] According to the EPA Greenbook accessed September 2010, http://www.epa.gov/oar/oaqps/greenbk/ancl.html#NEW%20MEXICO.

[3] The airport reference point is established by FAA and generally represents the geometric center of the airport.

Also depicted on **Exhibit 3A** is the area of potential effect (APE) for the runway projects under consideration. The APE is the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties. The APE for this project is defined as the projected 2016 65 DNL noise contour (see Chapter 4, Section 4.2.7) for the combined Proposed Action/No Action alternatives. As it was previously stated, there are two registered historic sites that are at least partially contained within the APE including the Old Albuquerque Terminal Building (SR #482) and the Albuquerque Veterans Administration Medical Center Historic District. These properties are considered Section 4(f) resources.

There are no locally managed, wildlife/waterfowl refuges within the vicinity of the airport.

3.3.3 Hazardous Materials, Pollution Prevention, and Solid Waste

There are two sites listed on the Environmental Protection Agency (EPA) National Priorities List (NPL) that are in close proximity to the airport. The NPL primarily serves as an information and management tool. It is part of the Superfund cleanup process and the NPL is updated periodically.

The sites listed on the NPL that are in close proximity to the airport are: the South Valley (also known as the GE site) and the Atchison, Topeka, and Santa Fe (AT&SF) site, also known as the AT&SF Tie Treater. These sites are located in the South Valley portion of Albuquerque.

Industrial development in the South Valley area began in the 1950's with the construction of a metal parts manufacturing plant by the Atomic Energy Commission. By the 1960's, organic chemicals (solvents) were being handled in the area. The South Valley (GE site) is located approximately one half miles southwest of the airport and covers about two square miles. Wells in the San Jose well field became contaminated by organic compounds, forcing the closure of over twenty private wells and two Albuquerque municipal wells. A new city water supply well was completed in April 1987 (Burton #4). Contamination in the soil and shallow ground water has been found in the residential area north of the GE plant. The three groundwater monitoring wells on airport property were installed to specifically monitor the movement of ground water contaminants from the GE site. The municipal groundwater supply well located at the intersection of Randolph and University Roads is in jeopardy of being contaminated by the GE site. The GE contamination is moving up gradient towards this city well. This city water supply well supplies water to the airport. The three groundwater monitoring wells are closely evaluated by the City of Albuquerque Environmental Health Department. The EPA completed the initial Remedial Investigation/Feasibility Study phase in 1988 along with the installation of a new replacement city water supply well in 1987. A remedial design was completed in May 1995 on the pumping and treatment of the deep aquifer in the area. Construction began on a remediation system in May 1995. Construction was completed on a recovery system and treatment plant and remedial operations began in April 1996.

Currently, Univar USA Inc. operates a pump and treat system in the intermediate aquifer at the Edmunds Street Operable Unit (OU). The pump and treat system is designed to contain and capture the ground water contaminant plume at the OU. The extracted water is then cleaned to a level exceeding the regulatory standards and discharged back to the aquifer through an infiltration gallery. As required under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the EPA conducted a third five-year review of this South Valley Superfund Site OU in September 2005. The EPA found the remedy for this site to be protective of human health and the environment.

The AT&SF site is located west of Interstate 25 and east of State Road 47, approximately one to two miles west of the airport. The EPA has identified fifteen City of Albuquerque, three Kirtland Air Force Base, and 148 private wells within four miles of the site that serve an estimated 43,500 people. The site is an abandoned wood preserving facility in an industrial area. AT&SF used the facility to treat various wood products (railroad ties, bridge timbers, fence posts, etc.) with a solution of creosote and oil. The site operated form March 1908 to January 1972, at which time it was closed and dismantled. Wash-down waters, spills and leakage were disposed of in an unlined surface impoundment. The sump and impoundment area covered approximately 3.4 acres. The site was proposed on the NPL on October 14, 1992, because of the threat to ground water. AT&SF and EPA signed an Administrative Order on Consent on June 6, 1994 for the performance of the Remedial Investigation and Feasibility Study. On April 22, 1999, sludges and contaminated soils were removed in the old impoundment area. On-going clean-up efforts are being performed on the site to continue rectifying the presence of creosote contaminants in the groundwater. Groundwater contaminants from this site do not seem to be a threat to any of the water supplies at the airport.

The State of New Mexico is authorized to operate a hazardous waste management program in lieu of the Federal program for those portions of the Resource Conservation and Recovery Act (RCRA) in effect prior to the enactment of the Hazardous and Solid Waste Amendments (HSWA) of 1984. In January 1996, the State of New Mexico was authorized to operate a hazardous waste management program for HSWA, which imposes additional corrective action requirements on hazardous waste facilities for releases to the environment.

The Sandia National Laboratories, located on Kirtland Air Force Base, is a multi-purpose engineering and science laboratory owned by the Department of Energy (DOE) and co-operated by Sandia Corporation, a subsidiary of Lockheed Martin, and the DOE. SNL designs non-nuclear components for the nation's nuclear weapons, performs a wide variety of energy research and development projects, and works on assignments that respond to national security threats. SNL generates wastes that are regulated under the Resource Conservation and Recovery Act (RCRA), the New Mexico Hazardous Waste Act and implementing regulations.

Solid waste at Albuquerque International Sunport is collected by the City of Albuquerque and transported to the Cerro Colorado Landfill located approximately 25 miles west of the airport. This landfill has a 20-year operating permit, which was renewed in April 2001 for 180 acres of waste disposal. Cerro Colorado has a life expectancy of 50 years and complies with all state solid waste management regulations.

There are no open landfills located within two miles of airport property. A transfer station (convenience center) is located in Montesa Park south of the airport, just over 600 feet southeast of the south end of Runway 17-35.

3.3.4 Historical, Architectural, Archaeological, and Cultural Resources

A search of the National Park Service's National Register of Historic Places (NRHP) indicated that the only property on the airport entered on the NRHP is the Old Albuquerque Terminal Building (SR# 482). The nearest off-airport site listed on the NRHP is the Albuquerque Veterans Administration Medical Center Historic District, located immediately northeast of Kirtland Air Force Base.

In addition, as part of the 1994 *Environmental Assessment for the Improvements to Runway 3-21*, a literature search and field survey was conducted in 1993 to identify cultural resources in the vicinity of the proposed runway extension project. Two archaeological sites with the "potential to yield information important to the prehistory of the region and which have possible National Register significance" were located. A "prehistoric cultural locality" was also identified during the survey. This site was identified as an old Anasazi site. This site was excavated, mapped and artifacts removed and cataloged by Mariah Associates.

The first archaeological site contained a scatter of ceramic and lithic artifacts. The site area was located between the extended runway and its taxiway and had been leveled and extensively disturbed. The original site was likely confined to a smaller area and the artifacts later scattered as the result of a grading operation. No structural features are visible, but the surveyor noted that subsurface structures and cultural sediments may exist. The surveyor anticipated the site was probably a small hamlet settlement of Socorro Phase affinity.

The second archaeological site contained a scatter of lithic artifacts and fire-cracked rock debris. The fire-cracked debris indicated the presence of a hearth structure(s). The surveyor noted that it was probable that the site area was buried by low dune formation. According to the surveyor, the site was probably Late Archaic Period encampments and may contain hearths and possible shelter basins or shallow pithouses.

The prehistoric cultural locality contained six obsidian flakes. No associated structural features or cultural sediments were located.

Consultation with the Pueblo of Isleta was undertaken to determine potential impacts on tribal historic resources. In a response from the Pueblo of Isleta Governor's office dated April 13, 2011, it was determined that the proposed closure of Runway 17-35 would not have an impact on religious or cultural sites affiliated with the Pueblo of Isleta. A copy of this letter can be found in **Appendix I**.

3.3.5 Noise

Exhibit 3D depicts the existing noise condition at the airport. As indicated on the exhibit, portions of the 75, 70, and 65 DNL noise contour extend beyond airport property. The area immediately surrounding the airport to the east, west, and south consists primarily of compatible land uses including commercial/industrial, public/institutional land uses, and open space. Residential land uses are located immediately north of the airport. Currently there are four noise-sensitive land uses contained within the 65 DNL noise contour consisting of the Presbyterian Healthcare Services Hospital located northwest of the airport, a single family residential land use west of the airport at the intersection of Hill Street and 2nd Street in the approach/departure path for Runway 8-26, and two multi-family residential facilities immediately north of the airport at the northeast corner of Gibson Boulevard and Wellesley Drive. A total of ten residential living units are currently contained within the 65 DNL contour accounting for the individual units in the multi-family residential facilities and the single family residential land use. A detailed discussion of how the existing noise condition was generated can be found in **Appendix G**.

08-EA-02-3D-12/08/10

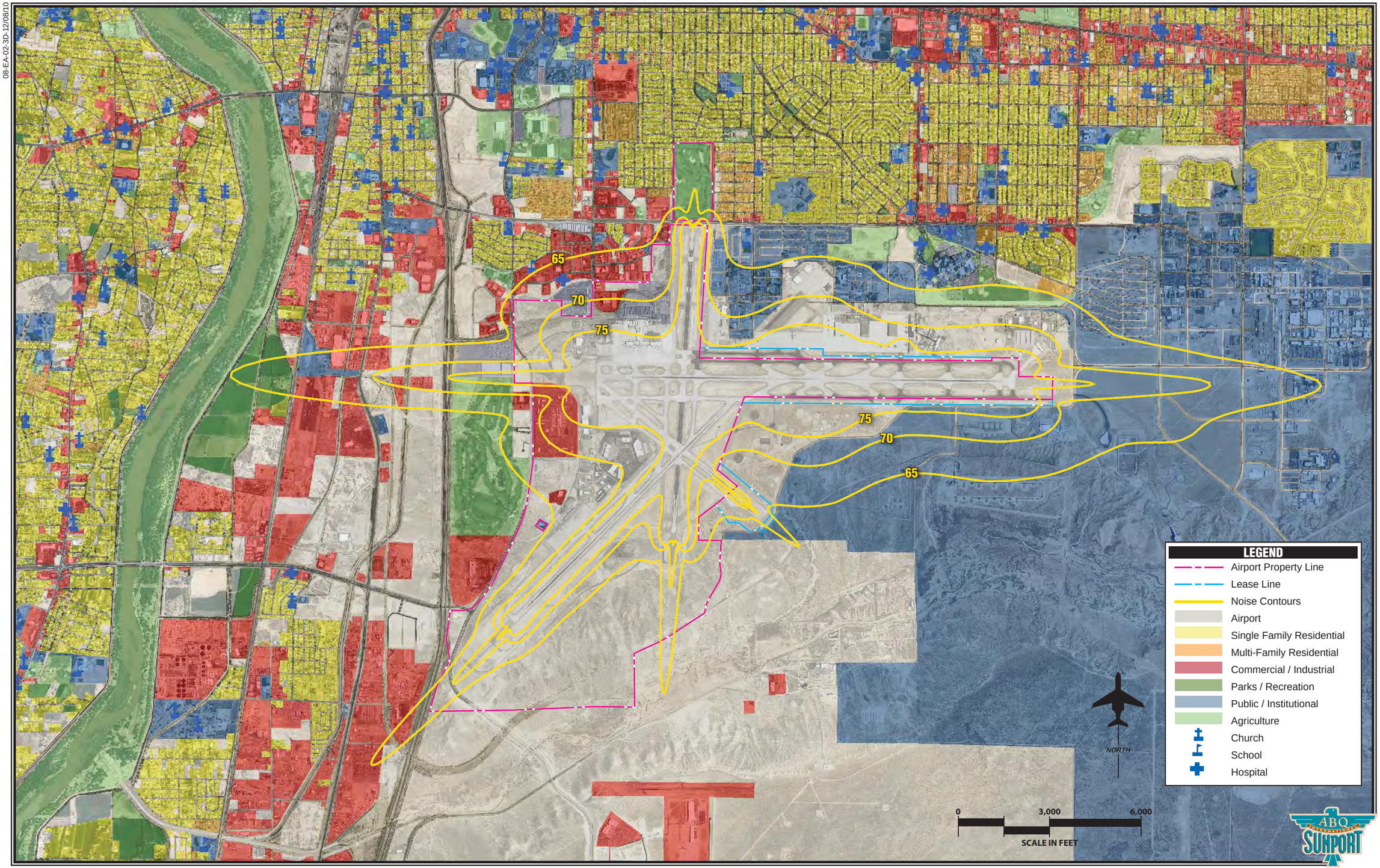


Exhibit 3D
LAND USE WITH
EXISTING NOISE CONTOURS

3.3.6 Environmental Justice

Environmental justice analysis considers the potential of Federal actions to cause disproportionate and adverse effects on low-income or minority populations. Information regarding the demographic characteristics of the area surrounding the airport was obtained from the U.S. Census Bureau. The purpose of this section is to provide background material which will be utilized in the social and socioeconomic discussions with in Chapter Four of this EA.

The population density for the three United States Census block groups that include the airport is 246 persons per square mile. Within these block groups, the minority population is approximately 69 percent, which is above the county average of 50 percent.

The percent of population below the poverty level for the three block groups is approximately 20 percent, which is slightly higher than the overall average poverty level for the county of 14 percent. **Exhibit 3E** depicts the distribution of the percent minority and percent below poverty for the U.S. Census block groups in the area surrounding Albuquerque International Sunport.

- **POPULATION**

Historical population estimates for the City of Albuquerque, Bernalillo County, and the State of New Mexico are presented in **Table 3C**. As indicated in the table, the population of the city, county, and state have increased since 1990.

TABLE 3C
Population Trends (1990-2009)

Year	City of Albuquerque	Bernalillo County	State of New Mexico
1990	384,736	480,577	1,515,069
2000	448,607	556,678	1,819,046
2009	528,497	642,527	2,009,671

Source: U.S. Census Bureau: 1990, 2000, 2009

Table 3D provides additional socioeconomic information for the area. This information is important as it will assist with the environmental justice impact analysis contained within Chapter Four of this EA.

TABLE 3D
Demographic Information

Income	City of Albuquerque	Bernalillo County
Demographic Information		
Median Family Income	$44,113	$57,221
Per Capita Income	$24,897	$25,144
Percent of Individuals below Poverty Level	14.8%	14.2%

Source: U.S. Census Bureau: 2007

Depicted on **Exhibit 3F** are the flight tracks (excluding military operations) for typical daily operations at Albuquerque International Sunport and the percent of residents living in poverty for census tracts in the vicinity of the airport. As can be seen on the exhibit, Runway 17-35 is used on a very limited basis in

comparison to the other runways. The closure of Runway 17-35 would not likely significantly increase the impact of the flight tracks to the other runways on those tracts with higher levels of residents living in poverty.

3.4 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The purpose of this section is to outline those projects which will need to be considered during the cumulative impact analysis in Chapter Four of this EA. The Council on Environmental Quality (CEQ), Section 1508.7, defines cumulative impact as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past projects are defined as those which have been undertaken over the past few years. Foreseeable future actions are defined as those which are likely to become a reality and have begun the approval design or construction processes. Projects which are conceptual in nature are not considered as they may or may not be undertaken.

AIRPORT DEVELOPMENT

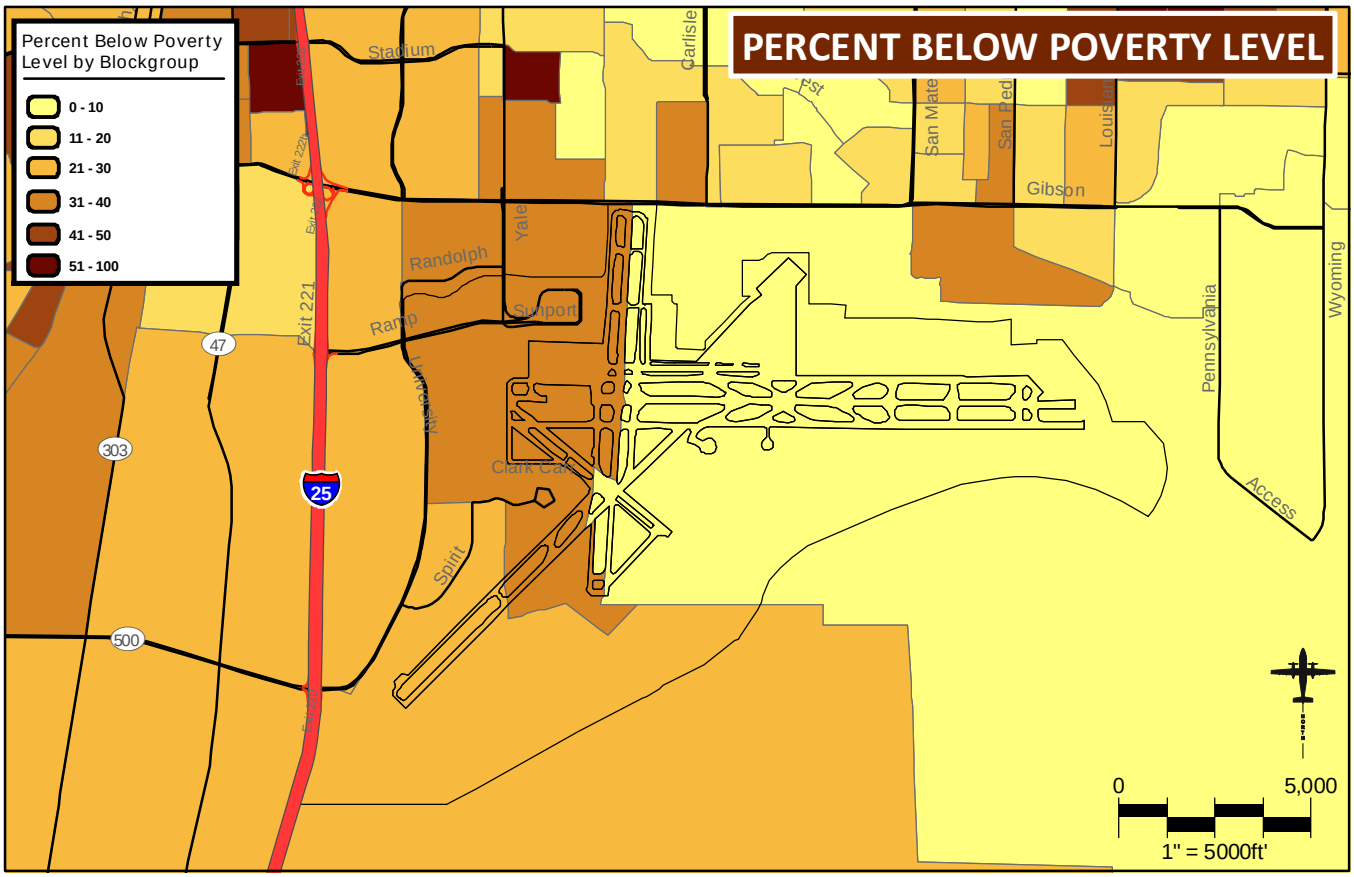
Recent and on-going improvements at Albuquerque International Sunport include rehabilitations of the terminal apron, rehabilitation of the south general aviation apron, upgrades to the terminal communications system, upgrades of the Flight Information Display System, rehabilitation of the terminal's public space, mechanical, electrical, and fire systems, and rehabilitation of the terminal passenger screening area.

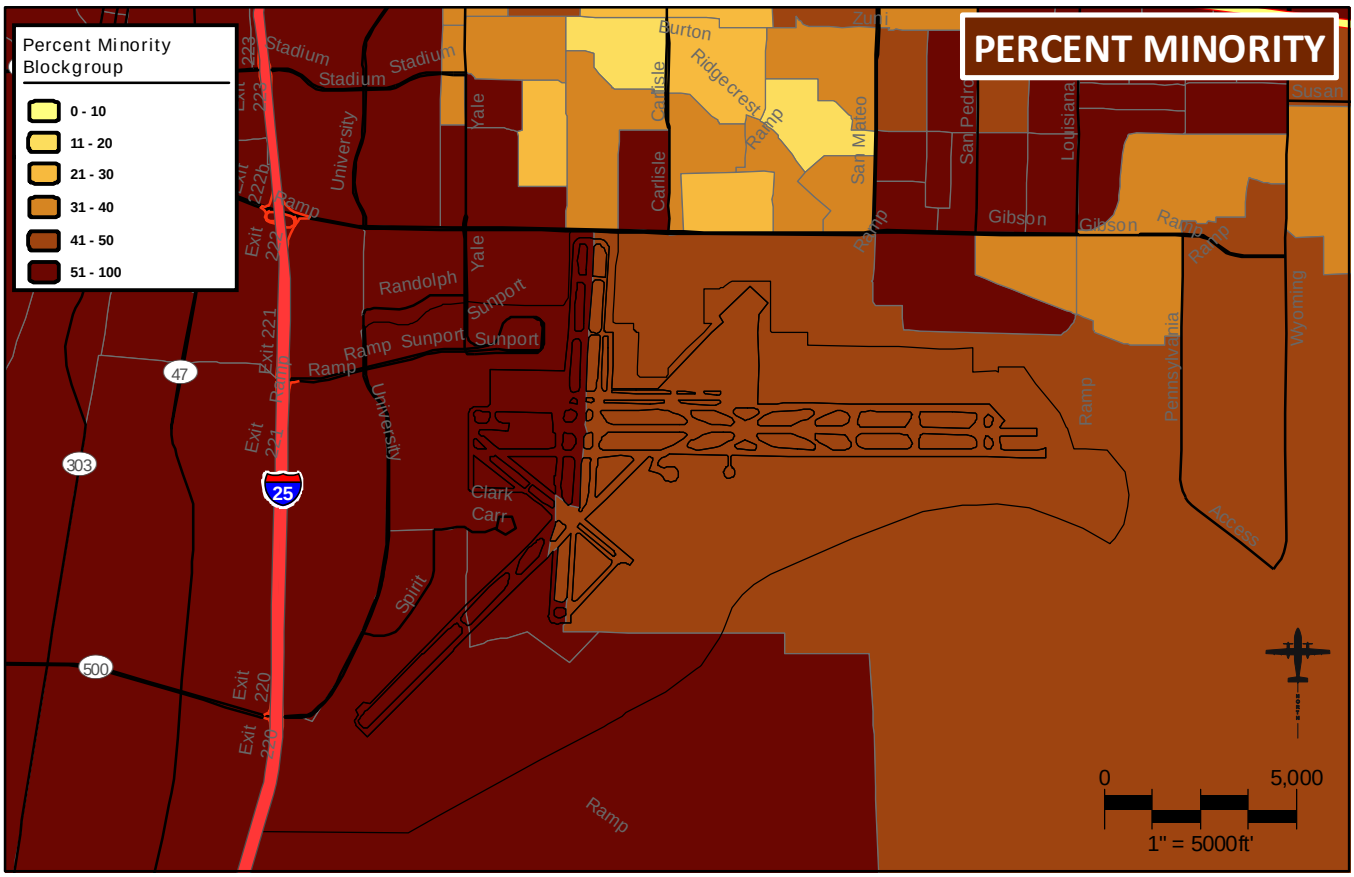
The airport has also undertaken several energy conservation projects. These projects include:

- Installation of photovoltaic solar panels on a parking structure – Phase I completed in 2009, second phase to be completed in spring 2011.
- Solar charging station and electric patrol vehicle for the parking structure – To be completed spring 2011.
- Terminal lighting modernization – Complete late 2010.
- Parking Structure Lighting Modernization Evaluation and Recommendations study – To be completed November 2010.
- LED airfield lighting upgrade – To be completed spring 2011.

OTHER DEVELOPMENT

As it was previously discussed, the Mesa del Sol planned community is currently under development immediately south of Albuquerque International Sunport. This community is planned to be located on approximately 12,900 acres with 37,500 homes, 18 million square feet of office space, 4,400 acres for residential and supporting retail, 800 acres for schools and universities, and 3,200 acres reserved for parks and open space.





Source: Blockgroup data is from the US Census Bureau, SF3 tables. Blockgroup shapefiles are from ESRI.

Exhibit 3E
MINORITY AND LOW INCOME POPULATIONS

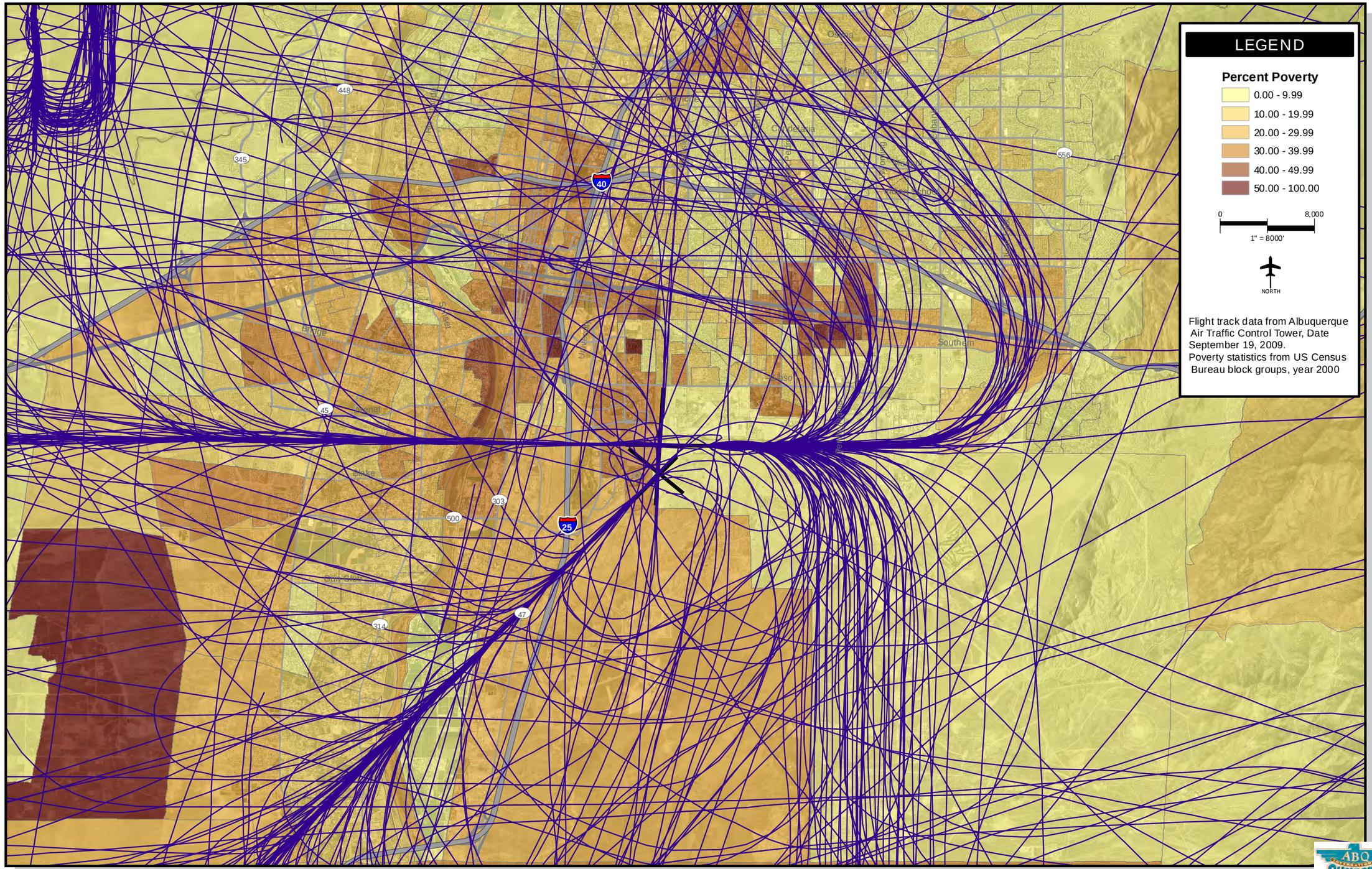


Exhibit 3F
FLIGHT TRACKS AND BLOCK GROUP POVERTY LEVELS

The Public Works Division of Bernalillo County is planning to construct an extension of Sunport Boulevard west from the Interstate 25 exit 221 interchange to Broadway Boulevard to accommodate future traffic growth. This project will also include a preliminary assessment of the feasibility of a New Mexico Railrunner Express (NMRRX) connection to provide direct access to the Albuquerque International Sunport and the Kirtland Air Force Base and/or a new NMRRX Station. Construction of this project is anticipated to start in early 2013.

A joint effort between Bernalillo County, the Albuquerque Bernalillo County Water Utility Authority (ABCWUA), and the State of New Mexico will construct the South Valley Drinking Water Project (SVDWP).

Commercial developments including hotel construction has occurred in the immediate vicinity of the terminal area.

Chapter Four

ENVIRONMENTAL CONSEQUENCES

Chapter Four
ENVIRONMENTAL CONSEQUENCES

Federal Aviation Administration (FAA) Orders 1050.1E, *Environmental Impacts: Policies and Procedures*, and 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions*, define the form and content of Environmental Assessments (EAs). An EA examines a number of specific categories to determine whether a potential for significant environmental impacts from the proposed improvements exists. Impacts are determined by comparing the anticipated local environmental condition after development (implementation of the Proposed Action alternative) to the conditions on and around the airport should no project be developed (implementation of the No Action alternative). Data regarding the existing condition of the project site is provided within Chapter Three of this EA.

For the purposes of this EA, the environmental consequences were determined for the following:

- The No Action alternative – This alternative provides a baseline of environmental conditions for comparison to the Proposed Action alternative. For the purposes of this EA, the No Action alternative assumes Runway 17-35 will be reconstructed at its present length to a pavement strength of 12,500 pounds single-wheel loading.[1]

- The Proposed Action alternative (the preferred alternative) – Implementation of this alternative would result in the permanent closure of Runway 17-35 at the Albuquerque International Sunport.

[1] Based on the engineering report contained in **Appendix F**, the pavement condition of the runway would need to be improved if the runway is to remain open. If no runway improvements are undertaken, the airport would eventually need to close the runway due to unsafe operating conditions.

In accordance with the Council on Environmental Quality (CEQ) guidance, as contained within 40 Code of Federal Regulations (CFR) 1508.8, the environmental consequences of each impact category include consideration of the following:

- Direct effects and their significance. Direct effects are defined as those which are caused by the action and occur at the same time and place.

- Indirect effects and their significance. Indirect effects are defined as those which are caused by the action and are later in time or further removed in distance.

- Cumulative effects and their significance. Cumulative effects are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Past, present, and reasonably foreseeable future actions which will be evaluated were described within Chapter Three of this EA. Only those past, present, and reasonably foreseeable future actions that incrementally contribute to the cumulative effects on resources affected by the Proposed Action will be considered. Past projects are defined as those which have been undertaken over the past few years. Foreseeable future actions are defined as those which are likely to become a reality and have begun the approval design or construction processes. Projects which are conceptual in nature are not considered as they may or may not be undertaken. Resources which are not affected by the Proposed Action will not be evaluated for cumulative impacts, unless such an evaluation was requested by a resource agency. A discussion of the recent and reasonably foreseeable projects is included in Section 3.4 of Chapter Three.

Where necessary, mitigation measures are discussed which would reduce or eliminate anticipated environmental impacts for each of the alternatives. Special purpose laws which protect various environmental resources will also be discussed.

The following sections contain a detailed impact analysis for those categories as defined within Appendix A of FAA Order 1050.1E and Table 7-1 of FAA Order 5050.4B. Section 4.2 provides detailed descriptions of each of the resource categories and an analysis of the impacts to these resources.

4.1 RESOURCES THE PROPOSED ACTION WOULD NOT AFFECT

As detailed in Chapter Three and based on input received from various resource agencies, available environmental documents, and secondary sources related to the project area, it has been determined that implementation of the Proposed Action alternative will not affect the following resources:

- **Air Quality** - Albuquerque International Sunport is located Bernalillo County which is an attainment area for all criteria pollutants as defined by the U.S. Environmental Protection Agency (EPA)[2]. Per FAA *Air Quality Procedures for Civilian Airports & Air Force Bases*, projects that will not increase the capacity of an airport, such as the Proposed Action, are not likely to exceed the NAAQS; therefore, an air quality analysis was not prepared under NEPA. Additionally, because the project area is currently in attainment of all the NAAQS, no General Conformity or

[2] Federal criteria pollutants are regulated under the National Ambient Air Quality Standards (NAAQS) and include carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb).

Transportation Conformity determinations, as mandated by the Clean Air Act, are necessary. However, for the purpose of disclosure, a construction-related emissions inventory, discussed in Section 4.2.2, was prepared.

- **Coastal Resources** – The project is located in an inland area not subject to coastal laws or regulations.
- **Department of Transportation Section 4(f)** – The project impact area is located entirely on airport property and would not directly impact any publicly owned historic site, park, recreation area, or waterfowl and wildlife refuge of national, state, regional, or local importance. Indirect or construction related Section 4(f) impacts will also not occur. The Puerto Del Sol golf course located north of the airport will experience less noise and fewer overflights with the closure of Runway 17-35, and the noise exposure at the Old Albuquerque Terminal Building (SR# 482) and the Albuquerque Veterans Administration Medical Center Historic District will be essentially the same under both alternative scenarios (refer to Section 4.2.4.) The Pueblo of Isleta has indicated in a letter dated April 13, 2011, that the proposed closure of Runway 17-35 will not have an impact on religious or cultural sites affiliated with the Pueblo of Isleta.
- **Farmland** – No farmland of federal, state, or local importance is located in the airport environs.
- **Floodplains** – According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 35001C0361G, the project area is not located within a 100-year floodplain.
- **Secondary (Induced) Impacts** – The closure of Runway 17-35 will not result in shifts in patterns of population movement and growth, public service demands, or changes in business and economic activity.
- **Threatened or Endangered Species** –Land disturbance associated with the proposed closure of Runway 17-35 will be limited to the currently paved runway and taxiway areas. Six federally listed threatened or endangered species are known to occur in Bernalillo County; however none of these species or their critical habitat are located within this project area. Therefore, no impacts to federally listed species will occur.
- **Wild and Scenic Rivers** – The State of New Mexico has four river segments with the designation of wild and scenic: Jemez River-East Fork, Pecos River, Rio Chama, and Rio Grande. Each of these river segments is located north of Albuquerque outside the project area. The nearest designated wild and scenic river segment is the Jemez River-East Fork, which is approximately 56 miles north of the project area.
- **Wetlands and Waters of the U.S**. –A review of aerial photography and the United States Geological Survey (USGS) National Hydrology Dataset indicates that no potential waters of the U.S. or wetlands are present within the project area. Furthermore, a letter from the Department of the Army Corps of Engineers (COE) Albuquerque District dated August 14, 2009, states that the project will not require COE authorization (refer to **Appendix A)**.

4.2 RESOURCES THE PROPOSED ACTION MAY POTENTIALLY AFFECT

4.2.1 Compatible Land Use

An airport's compatibility with surrounding land uses is usually associated with the extent of the airport's noise impacts. Airport projects such as those needed to accommodate fleet mix changes, an increase in operations at the airport, or air traffic changes are examples of activities which can alter noise impacts and affect surrounding land uses. Typically, if the noise analysis concludes that there is no significant impact, a similar conclusion usually can be made with respect to compatible land use. However, if the Proposed Action would result in other impacts exceeding thresholds of significance

which have land use ramifications, such as disruption of communities, relocation of businesses or residences, and induced socioeconomic impacts, the effects of the land use impacts shall also be discussed within this section.

Per FAA Order 1050.1E, Appendix A, paragraph 4.3, when the noise analysis determines that a significant impact will occur over noise-sensitive areas within the 65 DNL noise contour, the compatible land use section should include a discussion on mitigation measures to be taken along with other land use controls.

As described in Chapter Three, the area immediately surrounding the airport to the east, west, and south consists primarily of compatible land uses including commercial/industrial, public/institutional land uses, and open space. Residential land uses are located immediately north and further to the west of the airport. Currently there are four noise-sensitive land uses contained within the 65 DNL noise contour. These land uses consist of a hospital located northwest of the airport, a single family residential land use west of the airport in the approach/departure path for Runway 8-26, and two multi-family residential facilities immediately north of the airport. A total of ten residential living units are currently contained within the 65 DNL contour accounting for the individual units in the multi-family residential facilities and the single family residential land use.

Proposed Action Alternative

As discussed within Section 4.2.7, with the closure of Runway 17-35, up to 17 noise-sensitive land uses are contained within the 2016 Proposed Action alternative 65 DNL noise contour. A grid point analysis completed for the area indicated that none of the land uses experience a DNL 1.5 dB increase when compared to the No Action alternative.

The proposed action is consistent with development outlined within the 2003 *Albuquerque International Sunport Airport Master Plan* and the *Albuquerque/Bernalillo Comprehensive Plan as Amended 2003.*

No Action Alternative

The reconstruction of Runway 17-35 will not require the acquisition of property nor will it necessitate the relocation of businesses. Runway 17-35 would continue to be used by aircraft weighing 12,500 pounds or less as well as military aircraft, which utilize the runway for night-time training operations.

The No Action alternative is a continuation of existing conditions, which would result in a total of 27 noise-sensitive land uses contained within the 2016 65 DNL noise contour. If Runway 17-35 remains in use, noise-sensitive land uses immediately north of the airport will experience noise levels at or above the threshold of significant impact.

Analysis and Mitigation

Implementation of the Proposed Action alternative removes ten residential noise-sensitive land uses from the 2016 65 DNL noise contour, thereby increasing the compatibility of the airport with surrounding land uses. These residences include multi-family residential facilities located north of the

airport at the intersection of Gibson Boulevard and Wellesley Drive and single-family residences in the vicinity of Miles Road and Cornell Drive, also north of the airport.

The noise analysis found that none of the noise-sensitive land uses in the vicinity of the airport would experience a 1.5 dB DNL increase in noise when compared to the No Action alternative; therefore, the threshold of significance for noise is not exceeded with implementation of the Proposed Action alternative. In fact, the noise exposure either remained the same or decreased when comparing the No Action and Proposed Action noise analysis results (refer to **Table 4E**). Implementation of the Proposed Action reduces the overall noise impact of the airport on noise-sensitive development.

The Proposed Action does not divide or disrupt an established community; require residential or business relocations; result in induced socioeconomic impacts; or result in wetland, floodplain, or critical habitat impacts which exceed thresholds of significance established by any involved regulatory or advisory agencies.

4.2.2 Construction Impacts

Airport construction-related environmental effects generally include dust and equipment emissions, noise, and storm water runoff. In most cases, these effects are subject to federal, state, and/or local ordinances or regulations which typically prescribe suitable mitigation measures. Significant impacts occur when the severity of construction impacts cannot be mitigated below the threshold for the affected resources (i.e., air quality, noise, water quality, etc.).

As discussed in Chapter Three, the City of Albuquerque Environmental Health/Air Quality Division administers the Fugitive Dust Control Program in accordance with the Albuquerque-Bernalillo County Air Quality Control Board regulation 20.11.20 of the New Mexico Administrative Code, which requires a Fugitive Dust Control Construction Permit for projects which include land disturbance of more than three quarters of an acre.

Proposed Action

The Proposed Action includes the demolition of Runway 17-35 pavement. All construction-related impacts are expected to be temporary in nature and will be limited to the following resources. Due to the extent of demolition required for the Proposed Action alternative, specific analysis was undertaken for noise, air quality, and water quality as follows.

Noise. Construction-related noise impacts at airports result from the use of construction equipment. Noise impacts from construction activities are closely related to the type of construction equipment being used during each phase of construction. The construction/demolition phases are expected to include earthwork/grading and pavement removal. Each phase necessitates different types of construction equipment.

At Albuquerque International Sunport, demolition of Runway 17-35 is not expected to result in excessive construction equipment noise impacts as the construction activities are considered short-term. The construction site is buffered by Gibson Boulevard to the north, Interstate Highway 25 to the west, and open space land to the south.

Any construction or demolition work at the airport will need to comply with Section 9-9-8 *Construction or demolition of buildings and projects, excavation and grading,* and Section 9-9-13 *Temporary permits (amplified sound/ construction noise) of* the City of Albuquerque's Noise Ordinance.

Air Quality. The generation of exhaust emissions and fugitive dust as a result of demolition activities is anticipated due to the movement of heavy construction equipment and the exposure and disturbance of surface soils. This impact is expected to be both temporary and localized.

To quantify construction air quality impacts resulting from the use of machinery to demolish and remove runway and taxiway material, a construction emissions inventory was prepared using the Environmental Protection Agency's NONROAD and MOBILE6.2 emissions models and EPA's AP-42, Compilation of Air Pollutant Emission Factors. The NONROAD model estimates emissions related to non-highway approved vehicles such as heavy construction equipment. The MOBILE6.2 model evaluates highway vehicle emissions such as those from dump trucks or light-duty work trucks. EPA AP-42 emission factors are used to estimate fugitive dust related to ground disturbance activities.

Engineering estimates for the number of hours of equipment activity on site were used for the NONROAD calculations. These estimates include all phases of construction (site preparation, demolition/construction, and finish grading activities. Engineering estimates for the number of trips and miles traveled by on-road vehicles were used to calculate emissions with MOBILE6.2. This includes watering truck trips, on site pickup truck activity and off site trips for dump trucks hauling material to the processing facility. Engineering estimates for the number of operating hours for site disturbance activities were used to calculate fugitive dust emissions. Additional information regarding the engineering estimates used with the models and modeling inputs is provided in **Appendix G**.

Construction machinery emissions totals for the Proposed Action alternative is included in **Table 4A**. Output data from the NONROAD and MOBILE6.2 emissions models and AP-42 are expressed in tons per year. Fugitive dust emissions resulting from ground disturbance activities, including demolition of the existing runway and finish grading following pavement removal were calculated using the AP-42 emission factor calculation outlined in section 13.23, Heavy Construction Operations. For the purposes of this analysis, it is assumed there would be an overall 75 percent control efficiency of fugitive emissions due to implementation of mitigation measures to control dust such as site watering.

TABLE 4A
Proposed Action Construction Emissions (Tons per Year)

Pollutant[1]	Proposed Action Alternative Demolition Machinery Emissions (tons/year)	Proposed Action Alternative Land Disturbance Emissions (tons/year)[2]	Total Construction Emissions (tons/year)
CO	10.76	-	10.76
VOC	1.76	-	1.76
NO_X	23.90	-	23.90
SO_X	0.63	-	0.63
PM_{10}	1.59	3.04	4.63
$PM_{2.5}$	1.53	2.92	4.45

[1] NONROAD and MOBILE6.2 do not calculate emissions for lead

[2] Calculated using EPA, AP-42 Emission Factor, Section 13.23, Heavy Construction Operations. For the purposes of this analysis, it is assumed there would be an overall 75 percent control efficiency of fugitive emissions due to implementation of mitigation measures to control dust such as site watering.

Source: Coffman Associates analysis.

A summary of the construction emissions assumptions used for this analysis is included in **Appendix G**. It is expected that demolition of the existing runway (Proposed Action) will last six months.

Water Quality. Construction activities also have the potential to result in temporary water quality impacts, particularly suspended sediments flowing into the city storm sewer system, during and shortly after precipitation events in the construction phase.

To minimize project impacts, best management practices (BMPs) will be employed. BMPs include temporary measures to control water pollution, soil erosion, and siltation through the use of berms, fiber mats, gravels, mulches, slope drains, and other erosion control methods. BMPs protect the quality of surface water features on and off the airport by reducing or preventing pollution of storm water. BMPs are described fully within the following Analysis and Mitigation section.

In addition, through the *Clean Water Act* (CWA) Section 402, National Pollutant Discharge Elimination System (NPDES) permit coverage is required for any point source discharge to surface waters of the U.S., including storm water discharges associated with construction activity. Construction activities (clearing, grading, or excavating) that disturb one acre or more require coverage under NPDES Construction General Permit. This program is managed by the State of New Mexico. The airport sponsor will comply with the NPDES program regarding filing a Notice of Intent prior to the demolition of Runway 17-35.

No Action

Noise. The No Action alternative to reconstruct Runway 17-35 would result in the use of construction equipment. The construction phases are expected to include earthwork/grading and pavement reconstruction. Each phase necessitates different types of construction equipment.

At Albuquerque International Sunport, reconstruction of Runway 17-35 is not expected to result in excessive construction equipment noise impacts as the construction activities are considered short-term. The construction site is buffered by Gibson Boulevard to the north, Interstate Highway 25 to the west, and open space land to the south.
Any construction or demolition work at the airport will need to comply with Section 9-9-8 *Construction or demolition of buildings and projects, excavation and grading,* and Section 9-9-13 *Temporary permits (amplified sound/ construction noise) of* the City of Albuquerque's Noise Ordinance.

Air Quality. Construction emissions associated with the No Action alternative were calculated based on engineering estimates for the reconstruction of Runway 17-35 using the methodology described for the Proposed Action. It is assumed that the runway reconstruction would take two years to complete; however, the construction emissions for the two years have been combined into one for comparison to the Proposed Action alternative. **Table 4B** includes the total construction emissions for the No Action alternative.

TABLE 4B
No Action Construction Emissions (Tons per Year)

Pollutant[1]	No Action Alternative Construction Emissions (tons/year)[1]	No Action Alternative Land Disturbance Emissions (tons/year)[2]	Total Construction Emissions (tons/year)
CO	18.53	-	18.53
VOC	3.02	-	3.02
NO_X	42.61	-	42.61
SO_X	1.14	-	1.14
PM_{10}	2.76	24.77	27.53
$PM_{2.5}$	2.66	23.79	26.45

[1] NONROAD and MOBILE6.2 do not calculate emissions for lead

[2] Calculated using EPA, AP-42 Emission Factor, Section 13.23, Heavy Construction Operations. For the purposes of this analysis, it is assumed there would be an overall 75 percent control efficiency of fugitive emissions due to implementation of mitigation measures to control dust such as site watering.

Source: Coffman Associates analysis.

Analysis and Mitigation

Noise. Both the Proposed Action and No Action alternatives will involve the use of construction equipment and materials. Excessive construction noise impacts are not anticipated as construction activities will be short term.

Air Quality. **Table 4C** presents a comparison of the construction emissions associated with the Proposed Action and No Action alternatives. As indicated in the table, the implementation of the Proposed Action would result in less air pollutant emissions when compared to the No Action alternative. As previously discussed, the proposed action will occur in an attainment area; therefore, there are no *de minimis* thresholds for comparison of the emissions inventory levels.

TABLE 4C
Construction Emissions (Tons per Year)

Pollutant[1]	Proposed Action Alternative Construction Emissions (tons/year)	No Action Alternative Construction Emissions (tons/year)	Difference[2]
CO	10.76	18.53	7.77
VOC	1.76	3.02	1.26
NO_X	23.90	42.61	18.71
SO_X	0.63	1.14	0.51
PM_{10}	4.63	27.53	22.90
$PM_{2.5}$	4.45	26.45	22.00

[1] NONROAD and MOBILE6.2 do not calculate emissions for lead

[2] Difference = (Net No Action Emissions – Net Proposed Action Emissions)

Source: Coffman Associates analysis.

As previously discussed, the City of Albuquerque Environmental Health Department – Air Quality Division requires a Fugitive Dust Control Construction Permit for projects that disturb more than three quarters of an acre, which includes the proposed action. As part of the permit, a Dust Control Plan must be submitted which describes the reasonably available control measures that will be used to mitigate fugitive dust during project implementation. Both the Proposed Action and No Action alternatives are subject to this permitting requirement and would require the preparation of a dust control plan. Several of the mitigation measures outlined in the Water Quality discussion below are also applicable as fugitive dust mitigation measures. Those measures which should be included as part of the dust control plan filed with the permit application are noted with "(DCP)." Based on coordination with the City of Albuquerque Environmental Health Department – Air Quality Division a standard mitigation measure required for the Fugitive Dust Control Permit is the use of silt fencing. Due to the temporary nature of silt fencing it has the potential to be displaced by jet blast or propeller wash from taxiing aircraft, therefore an exemption to this mitigation should be sought for this project.

Water Quality. Both alternatives involve construction activities, which have the potential to result in temporary water quality impacts, particularly suspended sediments flowing into the city storm sewer system, during and shortly after precipitation events in the construction phase.

To minimize project impacts, the BMPs listed below will be employed. BMPs protect the quality of surface water features on and off the airport by reducing or preventing pollution of storm water.

In addition, through the *Clean Water Act* (CWA) Section 402, NPDES permit coverage is required for any point source discharge to surface waters of the U.S., including storm water discharges associated with construction activity. Construction activities (clearing, grading, or excavating) that disturb one acre or more require coverage under NPDES Construction General Permit. This program is managed by the State of New Mexico. The airport sponsor will comply with the NPDES program regarding filing a Notice of Intent prior to the demolition or reconstruction of Runway 17-35.

Site Preparation and Demolition

- Minimize land disturbance.
- Ongoing clean up of milled, ground, or cut material by using wet sweeping. (DCP)
- Use watering trucks to minimize dust. (DCP)
- Use dust suppressants applied in amounts, frequency, and rates recommended by the manufacturer on traveled paths which are not paved. (DCP)
- Cover trucks when hauling dirt. (DCP)
- Prevent material leakage from truck bed, sideboard, tailgate, or bottom dump gate. (DCP)
- Stabilize the surface of dirt piles if not removed immediately.
- Use windbreaks to prevent accidental dust pollution. (DCP)
- Limit vehicular paths and stabilize these temporary roads.
- Grade to prevent soil from washing onto paved roadways.
- Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet where such roads and parking areas exit the construction site to prevent dirt from washing onto paved roadways.

Construction

- Cover trucks when transferring materials.
- Use dust suppressants applied in amounts, frequency, and rates recommended by the manufacturer on traveled paths which are not paved. (DCP)

- Minimize unnecessary vehicular and machinery activities.
- Clean up spillage and track out as necessary to prevent particulates from being pulverized and entrained into the atmosphere. (DCP)
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site. (DCP)
- Start construction at the location upwind from the prevailing wind construction and stabilizing disturbed areas before disturbing additional areas. (DCP)

Post Construction

- Revegetate, using guidelines in 20.11.20.24 NMAC, any disturbed land not used. (DCP)
- Surfacing with gravel or other mulch material of a size and density sufficient to prevent surface material from becoming airborne. (DCP)
- Remove unused material.
- Remove dirt piles.
- Revegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

Construction Scheduling

- Sequence construction activities so that areas void of vegetation are not exposed for long periods of time.
- Schedule landscaping and other work that permanently stabilizes the area to be done immediately after the land has been graded to its final contour.
- Alter the project schedule to minimize the amount of denuded areas during wet months.
- Construct permanent storm water control facilities early in the project schedule and then utilize these structures for controlling erosion and sedimentation.

Limiting Exposed Areas

- Divert up-slope water from entering the denuded areas of the construction site by constructing dikes and swales.
- Divert or intercept storm water before it reaches long and/or steep slopes.
- Release captured storm water at a slow and controlled rate to prevent damage to downstream drainageways and structures.
- Increase the soil's ability to absorb moisture through vegetative means, surface roughening, and/or mulching.
- Stage grading so that the native vegetation provides a buffer to slow and disperse runoff.

Runoff Velocity Reduction

- Build check dams or other energy dissipation structures in unlined drainage channels to slow runoff velocity and encourage settlement of sediments.
- Limit slopes to 3:1 wherever practical.
- Intercept runoff before it reaches steep slopes using diversion dikes, swales, or other barriers.
- Protect slopes with mulches, matting, or other types of temporary or permanent soil stabilization.
- Provide velocity-reducing structures or rip rap linings at storm water outfalls.

Sediment Trapping

- Direct sediment-laden storm water to temporary sediment traps.
- Construct temporary sediment traps or basins at the drainage outlet for the site.

- Use temporary sediment barriers such as silt fences, straw bale barriers, sand bag barriers, and gravel filter barriers for construction sites with relatively flat slopes that produce sheet flow runoff.

Good Housekeeping

- Schedule regular inspections of storm water and sediment control devices.
- Repair and/or replace storm water and sediment control devices as often as necessary to maintain their effectiveness.

Implementation of the Proposed Action and No Action alternatives will result in short-term construction impacts. Recommendations established in FAA Advisory Circular 150/5370-10, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control,* will be incorporated into project design specifications to mitigate potential impacts. With implementation of the mitigation measures outlined in AC 150/5370-10 and described above, it is not anticipated that implementation of the Proposed Action alternative or the No Action alternative will exceed the established threshold of significance.

4.2.3 Hazardous Materials, Pollution Prevention, and Solid Waste

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the *Resource Conservation Recovery Act* (RCRA) (as amended by the *Federal Facilities Compliance Act of 1992*) and the *Comprehensive Environmental Response, Compensation, Liability Act* (CERCLA), as amended (also known as Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

Consideration should be given regarding the hazardous nature of any materials or wastes to be used, generated, or disturbed by the Proposed Action, as well as the control measures to be taken.

Threshold of Significance

Per FAA Order 1050.1E, Appendix A, paragraph 10.3, thresholds of significance are typically only reached when a resource agency has indicated that it would be difficult to issue a permit for the proposed development. A significant impact may also be realized if the Proposed Action would affect a property listed on the National Priorities List (NPL).

Proposed Action Alternative

Hazardous Materials. The closure of Runway 17-35 will result in demolition and earthwork disturbances to remove the runway and taxiway surfaces. Construction will be limited to the area containing these features; therefore, it is unlikely hazardous materials will be uncovered. There are no sites in the project area listed or under consideration for listing on the National Priority List in accordance with the Comprehensive Environmental Response Compensation and Liability Act as amended by the Superfund Amendment and Reauthorization Act.

In the event of a discovery of a hazardous substance in an amount greater than the reportable quantity as established by the EPA, the contractor shall notify the engineer's designated person responsible for the administration of the Spill Prevention Control Plan. The city representative will contact the National Response Center and provide details of the incident and measures taken to reduce the impact of the release.

Pollution Prevention. Implementation of the Proposed Action alternative will require a modification of the Sunport's NPDES permit to reflect the removal of impervious surfaces and any resulting changes in drainage patterns resulting from the project. Additionally, a construction-related NPDES permit will be required prior to demolition of the runway. This permit requires a Notice of Intent for all construction activities disturbing one acre or more of land. Construction-related water quality impacts are discussed under Section 4.2.2, Construction Impacts, and will be minimized through the BMPs.

Solid Waste. Solid waste, in the form of construction materials, is not expected to increase with implementation of the proposed project as the demolished runway materials will be taken to off-site processing facilities to be recycled into construction materials. Any other solid waste from the demolition of Runway 17-35 that cannot be recycled is not anticipated to exceed handling capabilities of the City of Albuquerque Solid Waste Management Department, which handles the removal of solid waste from the Sunport. The solid waste generated from the demolition of Runway 17-35 that cannot be recycled is also not anticipated to exceed the waste disposal capacity of the Cerro Colorado Landfill, the nearest landfill to the Sunport.

No Action Alternative

Hazardous Materials. Construction of the No Action Alternative will result in earthwork disturbances during the reconstruction of the runway. Previous construction at the airport has not resulted in the uncovering of any hazardous materials; therefore, it is unlikely that earthwork will expose any hazardous materials. The site does not contain a known source of contamination. There are no sites in the project area listed or under consideration for listing on the National Priority List in accordance with the Comprehensive Environmental Response Compensation and Liability Act as amended by the Superfund Amendment and Reauthorization Act.

In the event of a discovery of a hazardous substance in an amount greater than the reportable quantity as established by the EPA, the contractor shall notify the engineer's designated person responsible for the administration of the Spill Prevention Control Plan. The city representative will contact the National Response Center and provide details of the incident and measures taken to reduce the impact of the release.

Pollution Prevention. Implementation of the No Action alternative will require a construction-related NPDES permit prior to reconstruction of the runway. This permit requires a Notice of Intent for all construction activities disturbing one acre or more of land. Construction-related water quality impacts are discussed under Section 4.2.2, Construction Impacts, and will be minimized through the use of BMPs. A modification to the airport's NPDES general permit will not be required since the runway will be reconstructed at its current measurements, introducing no new impervious surfaces.

Solid Waste. Under the No Action alternative, the airport would function as it does currently; therefore, solid waste impacts are not anticipated as the airport will service the same number of operations regardless of whether Runway 17-35 were open or closed. Solid waste resulting from the

reconstruction of Runway 17-35 will increase on a short-term basis and is not anticipated to exceed handling capabilities.

Analysis and Mitigation

The city will obtain and modify necessary permits for operation of the airport and construction of the proposed improvements. The same operational level will be experienced at the airport for both alternatives; therefore, ongoing pollution prevention measures will be employed and solid waste will continue to be generated. Solid waste, including construction waste, will increase on a short-term basis; however, the quantity and type of construction-related solid waste is not anticipated to exceed handling capabilities. Demolished materials will be taken to off-site processing facilities to be recycled into construction materials. Additionally, the two CERCLA (Superfund) sites located in the vicinity of the airport will not be impacted by either the Proposed Action or No Action alternatives. The Proposed Action alternative will not result in impacts that exceed the significant impact thresholds previously discussed in this section.

4.2.4 Historical, Architectural, Archaeological, and Cultural Resources

Determination of a project's environmental impact to historic and cultural resources is made under guidance contained in the *National Historic Preservation Act of 1966*, as amended, and the *Archaeological and Historic Preservation Act of 1974*.

Section 106 of the *National Historic Preservation Act of 1966* (NHPA), as amended, requires federal agencies to take into account the effects of their undertakings on historic properties and determine if any properties in, or eligible for inclusions into, the National Register of Historic Places (NRHP) are present in the area. In addition, it affords the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the Council. The current regulations, *Protection on Historic Properties* (36 CFR Part 800), were amended on July 1, 2001, and incorporates the statutory changes mandated by the 1992 amendments to the NHPA.

The *Archaeological and Historic Preservation Act of 1974* (AHPA) describes the process that occurs when consultation with resource agencies indicate that there may be an impact on significant scientific, prehistoric, historic, archaeological, or paleontological resources. The process provides for the preparation of a professional resource survey of the area. Should the survey identify significant resources, the National Register process described above is followed. Should the survey be inconclusive, a determination is made on whether it is appropriate to provide a commitment to halt construction if resources are uncovered in order for a qualified professional to evaluate their importance and provide for data recovery, as necessary.

Proposed Action Alternative

As was described in Chapter Three, there are two sites listed on the National Register of Historic Places (NRHP) within the area of potential effect (APE). These sites include the Old Albuquerque Terminal Building located on airport property west of the current passenger terminal building and the Albuquerque Veterans Administration Medical Center Historic District. Neither of these historic sites

will be directly impacted by the proposed closure of Runway 17-35, as the removal of the runway does not require physical changes to the structures or their immediate surroundings. Indirect impacts are also not anticipated as the noise analysis in this chapter (Section 4.2.7) indicates the proposed improvement will have a negligible effect on the noise exposure at these sites. This is because the aircraft that currently utilize Runway 17-35 that will be displaced to the remaining runways once Runway 17-35 is closed are small single and multi-engine general aviation aircraft that do not have large noise footprints and will therefore not significantly alter noise exposure at the two sites listed on the NRHP.

The Pueblo of Isleta indicated in a letter dated April 13, 2011, that the proposed closure of Runway 17-35 will not have an impact on religious or cultural sites. This letter can be found in **Appendix I**.

No Action Alternative

Under the No Action alternative, Runway 17-35 would be reconstructed to its present length for the exclusive use of general aviation aircraft weighing 12,500 pounds or less. This runway reconstruction would not impact either of the historic sites located within the APE. The noise analysis in this chapter also indicates the continued use of Runway 17-35 would also have a negligible effect on the noise exposure at these sites.

Analysis and Mitigation

The FAA initiated a Section 106 review of this project with the State Historic Preservation Officer (SHPO) in January, 2011. Based on input received from the SHPO and resulting analyses, the FAA has determined that the proposed improvements will not impact Section 106 resources located within the APE. This finding has been communicated to the SHPO through this Draft EA. The FAA also initiated tribal review of this project with the Pueblo of Isleta in January, 2011. A response from the Pueblo of Isleta received April 13, 2011 indicated that the proposed project would not have an impact on religious or cultural sites affiliated with the Pueblo of Isleta. Correspondence between these agencies can be found in **Appendix I**.

Neither the Proposed Action alternative nor the No Action alternative will impact the two historic sites located in the APE. Should resources be unearthed during construction/demolition, all activities in the vicinity of the find will cease until a determination can be made as to its/their significance and, if necessary, a data recovery plan be implemented. If further on-site investigation is required, all subsequent recommendations shall conform to Section 106 of the NHPA. Impacts resulting from implementation of the Proposed Action alternative will not exceed the established threshold of significance for this impact category.

4.2.5 Light Emissions and Visual Effects

Airport lighting is characterized as either airfield lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). Generally, airport lighting does not result in significant impacts unless a high intensity strobe light, such as a Runway End Identification Light (REIL), would produce glare on any adjoining site, particularly residential uses.

Visual impacts relate to the extent that the proposed development contrasts with the existing environment and whether a jurisdictional agency considers this contrast objectionable. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact.

No specific impact thresholds have been established for this resource category by the FAA.

Proposed Action

Lighting Impacts. Runway 17-35 is presently equipped with medium intensity runway lighting (MIRL) and runway end identifier lights (REILs). The closure of Runway 17-35 will result in the elimination of these lighting systems, which may reduce the runway's lighting impacts on the residential areas located north of the airport near the intersection of Gibson Boulevard and Wellesley Drive.

Visual Impacts. Visual impacts resulting from implementation of the Proposed Action alternative will be reduced as overflights of neighborhoods north of the airport will be less frequent. The visual impact reduction will be most significant in the neighborhoods immediately north of the Runway 17 threshold where aircraft utilizing Runway 17-35 are arriving and departing at lower altitudes. Traffic operating to other runways may overfly the neighborhoods north of the airport, but are typically at higher altitudes limiting their visual impacts. There is a potential for increased overflights southwest of the airport by small aircraft weighing less than 12,500 pounds as those aircraft shift from utilizing Runway 17-35 to Runway 3-21. The majority of the land uses southwest of Runway 3-21 are commercial/industrial with sparse residential land uses. As a result, the increase in visual impacts southwest of the airport should be minimal.

No Action

The No Action alternative to reconstruct Runway 17-35 will result in the same light and visual impacts as exist presently.

Analysis and Mitigation

Implementation of the Proposed Action alternative will eliminate the Runway 17-35 light sources; therefore, light emissions will be reduced. Visual impacts immediately north of Runway 17-35 will be reduced as overflights to/from this runway will be eliminated. There is potential for a slight increase in visual impacts southwest of Runway 3-21 as small aircraft weighing 12,500 pounds or less shift their runway usage. Residential land uses southwest of Runway 3-21 are sparse; therefore, visual impacts should be minimal.

4.2.6 Natural Resources, Energy Supply, and Sustainable Design

Energy requirements associated with airport development projects generally fall into two categories: (1) those that relate to changed demands for stationary facilities (i.e., airfield lighting and terminal building heating); and (2) those that involve the movement of air and ground vehicles (i.e., fuel consumption). In addition to fuel, the use of natural resources includes construction materials, water, and manpower.

Per FAA Order 1050.1E, Appendix A, paragraph 13.3, an impact arises when a project will have a measurable effect on local energy supplies or would require the use of an unusual material or one in short supply. Increased consumption of fuel by aircraft is examined where ground movement or run-up times are increased substantially without offsetting efficiencies in operational procedures, or if the faction includes a change in flight patterns. Ground vehicles' fuel consumption is examined only if the action would add appreciably to access time, or if there would be a substantial change in movement patterns for on-airport service or other vehicles.

Proposed Action

The primary impact on natural resources resulting from alternative implementation is related to fuel and other resource usage during demolition of the runway and associated taxiways. Indirect impacts attributed to construction activities could temporarily increase the use of some or all of the following: electricity, fuel, oil, chemicals, water, and other forms of energy and resources needed to demolish Runway 17-35.

No Action

The No Action alternative will involve fuel and other resource usage during the reconstruction of Runway 17-35. The indirect impacts associated with the reconstruction of the runway will also temporarily increase the use of: electricity, fuel, oil, chemicals, water, and other forms of energy and resources needed.

Analysis and Mitigation

Implementation of the Proposed Action alternative will result in an increased use of energy and natural resources during demolition. It is not anticipated that the demand for these resources will exceed supply.

No mitigation measures are required. Impacts resulting from implementation of the Proposed Action alternative do not exceed the levels of significance for this impact category.

4.2.7 Noise

Aircraft sound emissions are often the most noticeable environmental impact an airport will produce on a surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable. To determine noise-related impacts that the Proposed Action could have on the environment surrounding the airport, noise exposure patterns based on projected future aviation activity should be analyzed. 49 USC Sections 47101 (a)(2), (c) and (h) establish policies to minimize current and projected noise impacts on nearby communities resulting from building and operating aviation facilities.

Per FAA Order 1050.1E, Appendix A, paragraph 14.3, a significant noise impact is defined as one which would occur if the Proposed Action would cause noise-sensitive areas to experience an increase in noise of 1.5 DNL or more, at or above the 65 DNL noise exposure level when compared to the No Action alternative for the same timeframe.

In accordance with the requirements of FAA Orders 1050.1E and 5050.4B, an analysis of aircraft noise exposure was developed for the Proposed Action and No Action future conditions. Future analysis time periods include the anticipated year of project implementation (2011) and five years beyond the implementation date (2016). Detailed descriptions of the modeling inputs, including operational and flight track assumptions, are included in **Appendix G**. The following sections outline the results of the noise modeling efforts for the Proposed Action and No Action conditions.

Proposed Action Alternative

2011 Noise Condition

Exhibit 4A depicts the forecast 2011 noise condition with implementation of the Proposed Action alternative shown with dashed yellow contours. These contours are depicted over existing land uses so that noise impacts on incompatible land uses can be identified. As shown on the exhibit, portions of the 65, 70, and 75 DNL contours extend beyond airport property. A total of two properties considered a noise-sensitive land use are contained within the 65 DNL contour. The first property identified on **Exhibit 4A** (#1), is the Presbyterian Healthcare System (hospital) located immediately northwest of the airport. The second property, (Inset A - #4), is located west of the airport and is a single family residential land use.

2016 Noise Condition

Exhibit 4B depicts the noise condition projected for 2016 for the Proposed Action alternative condition. Similar to the 2011 noise condition, portions of the 65, 70, and 75 DNL contours extend beyond airport property. As depicted on **Exhibit 4B**, there are 17 noise-sensitive land uses contained within the 65 DNL contour. The Presbyterian Healthcare System (#1) and the single family residential located west of the airport (#4) remain in the 65 DNL contour. The Springstone Montessori School (Inset D - #16) located northwest of the airport would be located within the 65 DNL contour. The residual properties consist of single and multi-family residential land uses located northwest and northeast of the airport (Insets C and D). The multi-family residential land use located northeast of the airport (Inset C - #13) is a youth and family services facility, which has 16 residential living units. As a result, a total of 30 residential living units are contained within the 65 DNL contour.

The increase in size of the 65 DNL and higher contours between 2011 and 2016 results in an additional 15 noise-sensitive properties containing 29 residential living units and a school. The increased contour size is attributable to a projected increase in overall operations at the Sunport.

No Action

For comparison, the No Action alternative DNL noise contours are also depicted on **Exhibit 4A** and **Exhibit 4B** using solid blue lines. As with the Proposed Action alternative, the portions of the 65, 70, and 75 DNL contours extend beyond existing airport property.

2011 Noise Condition

Under the 2011 No Action condition, a total of five properties with a noise-sensitive land use would be located within the 65 DNL contour. The affected properties include the Presbyterian Healthcare System (#1) and single and multi-family residential land uses. The single family residential land use is located west of the airport (Inset A - #4) and the multi-family residential land uses are located northeast of the Runway 17 threshold (Inset B - #'s 5, 9, and 10). Accounting for the number of living units in each of the single and multi-family residential land uses, there are a total of 21 residential living units contained within the 65 DNL contour.

2016 Noise Condition

Under the 2016 No Action alternative, a total of 27 properties with a noise-sensitive land use would be located within the 65 DNL contour. Each of these properties, consisting of the Presbyterian Healthcare System (#1), the Springstone Montessori School (#16), and single and multi-family residential land uses (Insets A, B, C, D, and E) are identified on **Exhibit 4B**. Accounting for the number of living units in each of the single and multi-family residential land uses, there are a total of 84 residential living units contained within the 65 DNL contour.

As was the case with the Proposed Action alternative, the increase in the size of the 65 DNL and higher contours between 2011 and 2016, to include 22 additional noise-sensitive properties containing 63 residential living units and a school, is attributable to a projected overall increase in operations at the Sunport.

Analysis and Mitigation

FAA Order 1050.1E states that a significant noise impact would occur if analysis shows that the Proposed Action will cause noise-sensitive areas to experience an increase in noise of 1.5dB DNL or more at or above 65 DNL when compared to the No Action alternative for the same timeframe. For example, an increase from 63.5 to 65 dB is considered a significant noise impact. Since noise-sensitive land uses are contained within the existing and anticipated future 65 DNL contours, a grid point analysis was completed to determine whether implementation of the Proposed Action alternative would result in impacts that exceed the FAA's established threshold of significance. To determine if a 1.5 dB DNL increase would be experienced with implementation of the Proposed Action alternative, noise-sensitive properties in the vicinity of the 65 DNL noise contour for the Proposed Action and No Action alternative scenarios were included within the analysis. (The location of these properties is identified on **Exhibit 4A and 4B**.) **Table 4D** summarizes the results of the analysis.

08-EA-02-4A-12/08/10

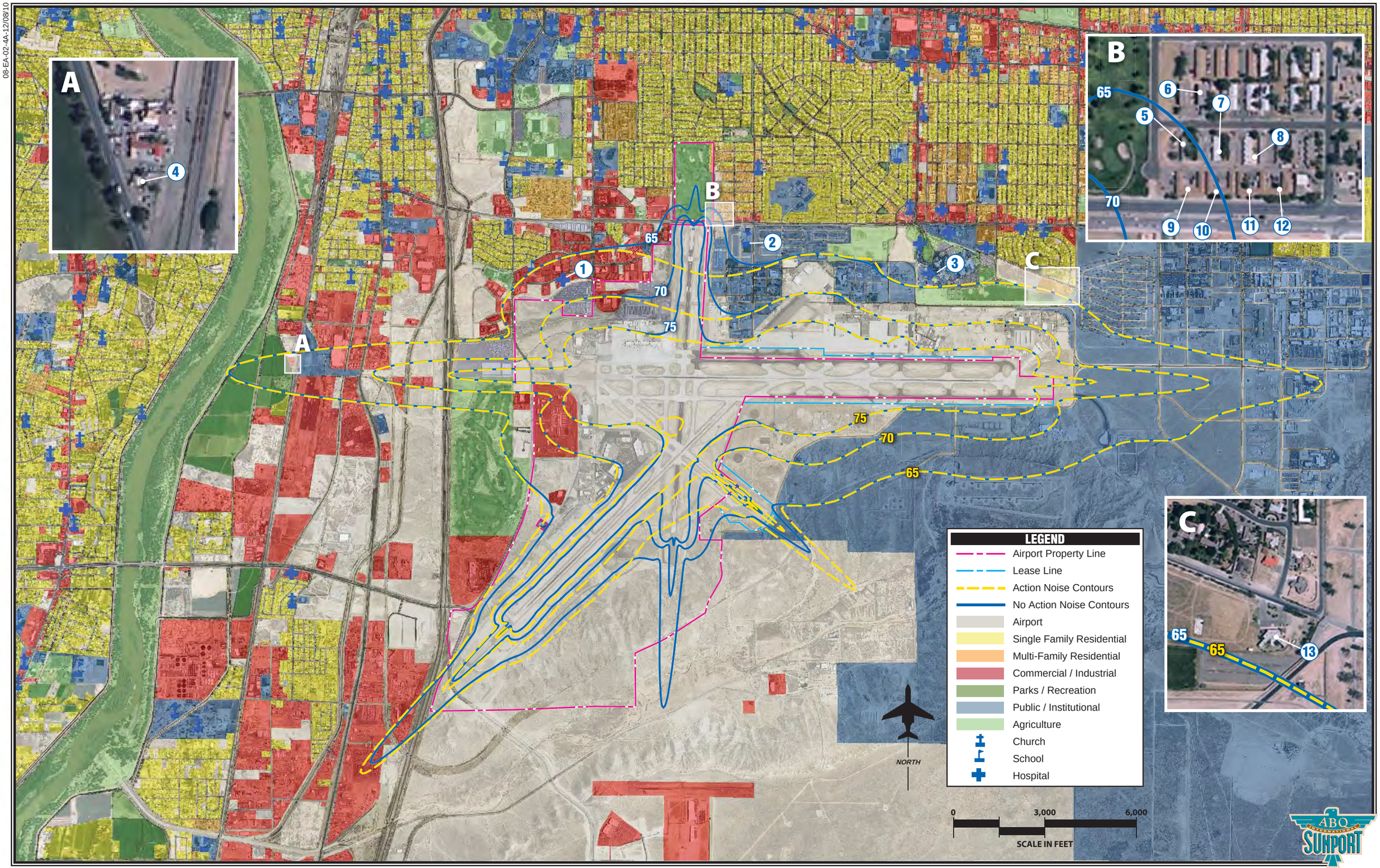


Exhibit 4A
LAND USE WITH
2011 ACTION / NO ACTION NOISE CONTOURS

08-EA-02-4B-9/30/09

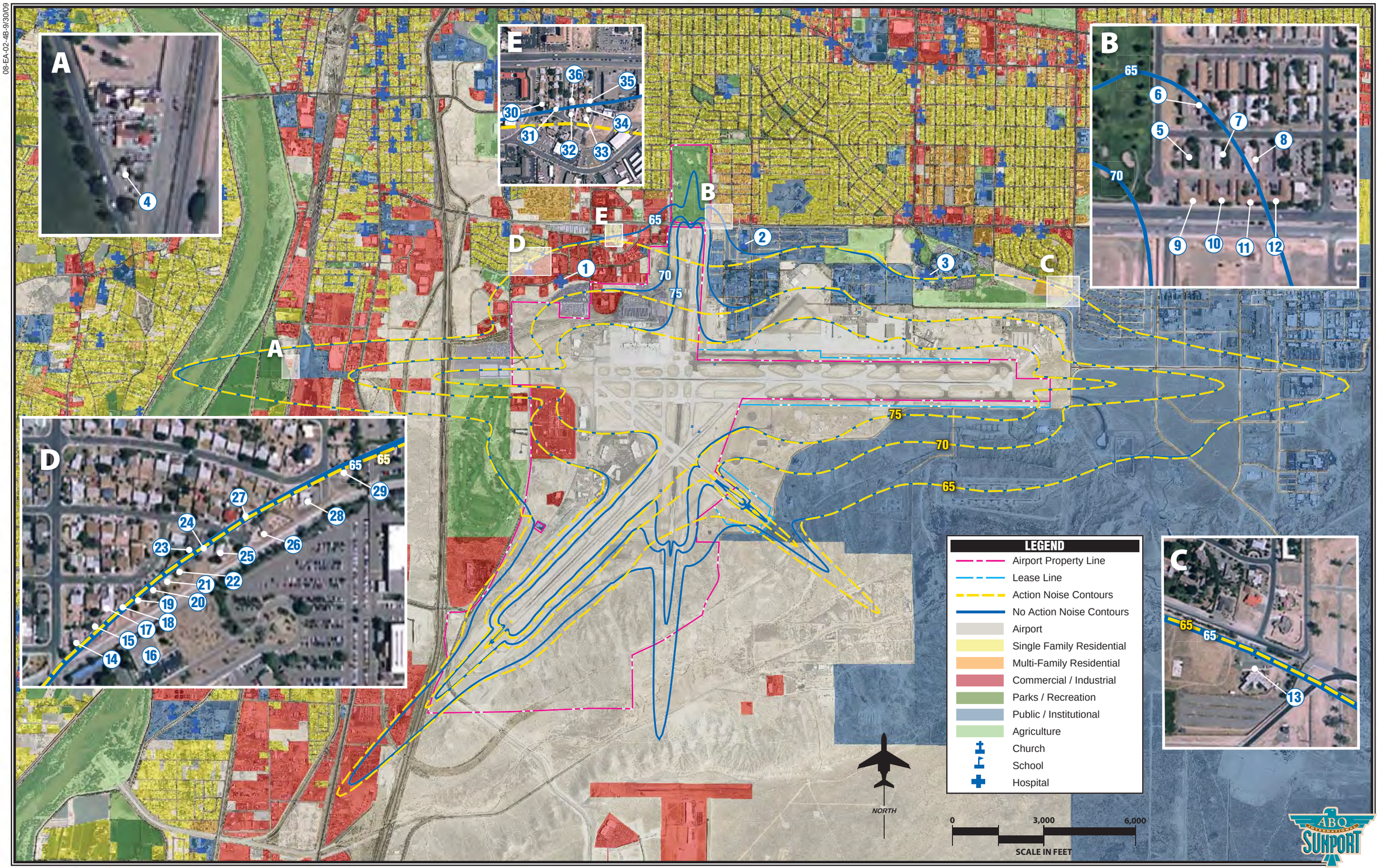


Exhibit 4B
LAND USE WITH
2016 ACTION / NO ACTION NOISE CONTOURS

TABLE 4D
Grid Point Analysis

GRID	2011 No Action DNL	2011 Proposed Action DNL	dB Difference	2016 No Action DNL	2016 Proposed Action DNL	dB Difference
1	65.6	65.5	-0.1	66.6	66.6	0.0
2	63.3	61.9	-1.4	64.3	62.9	-1.4
3	63.6	63.7	0.1	64.6	64.7	0.1
4	66.3	66.3	0.0	67.3	67.3	0.0
5	65.2	60.2	-5.0	66.2	61.3	-4.9
6	63.9	59.8	-4.1	64.9	60.8	-4.1
7	64.5	60.3	-4.2	65.5	61.3	-4.2
8	63.8	60.3	-3.5	64.8	61.3	-3.5
9	65.1	60.5	-4.6	66.1	61.6	-4.5
10	65.1	60.5	-4.6	66.1	61.6	-4.5
11	64.3	60.5	-3.8	65.3	61.6	-3.7
12	64.1	60.3	-3.8	65.0	61.3	-3.7
13	64.4	64.4	0.0	65.4	65.4	0.0
14	64.0	64.0	0.0	65.0	65.0	0.0
15	63.9	63.9	0.0	65.0	65.0	0.0
16	64.5	64.5	0.0	65.5	65.5	0.0
17	63.9	63.9	0.0	64.9	64.9	0.0
18	64.0	64.0	0.0	65.0	65.0	0.0
19	64.0	64.0	0.0	65.1	65.1	0.0
20	64.1	64.1	0.0	65.1	65.1	0.0
21	64.1	64.1	0.0	65.1	65.1	0.0
22	64.0	64.0	0.0	65.1	65.1	0.0
23	64.0	64.0	0.0	65.0	65.0	0.0
24	64.1	64.1	0.0	65.1	65.1	0.0
25	64.2	64.2	0.0	65.2	65.2	0.0
26	64.2	64.2	0.0	65.2	65.2	0.0
27	63.9	63.9	0.0	65.0	65.0	0.0
28	64.1	64.1	0.0	65.2	65.2	0.0
29	63.9	63.9	0.0	64.9	64.9	0.0
30	63.9	63.6	-0.3	64.9	64.6	-0.3
31	63.9	63.6	-0.3	65.0	64.6	-0.4
32	64.1	63.7	-0.4	65.1	64.7	-0.4
33	64.2	63.7	-0.5	65.2	64.8	-0.4
34	64.0	63.6	-0.4	65.1	64.6	-0.5
35	63.9	63.4	-0.5	64.9	64.5	-0.4
36	63.8	63.4	-0.4	64.9	64.5	-0.4

The results of the grid point analysis determined that implementation of the Proposed Action alternative will result in a decrease in noise on the noise-sensitive land uses contained within the 65 DNL noise contour when compared to the No Action alternative. Most notably, the Proposed Action alternative would significantly reduce the noise exposure contours to the north and south of Runway 17-35, removing the multi-family residential land uses from the 65 DNL contour northeast of the Runway 17 threshold. When compared to the No Action alternative, the 2016 Proposed Action alternative results in the removal of ten noise-sensitive land uses and a total of 54 residential living units from the 65 DNL or higher contour. **Table 4E** compares the No Action alternative and Proposed Action alternative for 2011 and 2016.

TABLE 4E
Alternatives Comparison

	Proposed Action 2011	No Action Alt. 2011	Proposed Action 2016	No Action Alt. 2016
Number of land uses within 65 DNL or higher contour	2	5	17	27
Number of residential living units within 65 DNL or higher contour	1	21	30	84
Number of land uses within 65 DNL contour experiencing 1.5 DNL noise increase as a result of the project.	0	Not Applicable	0	Not Applicable

As discussed previously, a significant noise impact would occur if the grid point analysis shows that the Proposed Action alternative will cause an increase over noise-sensitive land uses of DNL 1.5 dB or higher, resulting in a DNL 65 dB or higher noise exposure level. Based on the gridpoint analysis, it was determined that implementation of the Proposed Action alternative will not result in impacts that exceed the established significant threshold as described in FAA Order 1050.1E as noise-sensitive land uses experience either no increase or a decrease in dB levels. Only one property, the VA Healthcare System (#3), experienced a dB level increase of 0.1 dB, which is well below the significant noise impact threshold.

4.2.8 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project. Social impacts are generally evaluated based on areas of acquisition and/or areas of significant project impact, such as areas encompassed by noise levels in excess of 65 DNL.

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,* and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require FAA to provide for meaningful public involvement by minority and low-income populations as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they may be exposed to.

The acquisition of the residences and farmland is required to conform to the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (URARPAPA). These regulations mandate that certain relocation assistance services be made available to homeowners/tenants of the properties.

This assistance includes help finding comparable and decent substitute housing for the same cost, moving expenses, and in some cases, loss of income.

Per FAA Order 1050.1E, Appendix A, Paragraph 16.3, the thresholds of significance for this impact category are reached if the project negatively affects a disproportionately high number of minority or low-income populations or if children would be exposed to a disproportionate number of health and safety risks. Significant socioeconomic impacts would result if an extensive number of residents need to be relocated and sufficient replacement housing is unavailable, if extensive relocation of business is required and this relocation would create a severe economic hardship for the affected communities, if disruptions of local traffic patterns would substantially reduce the level of service of the roads serving the airport and the surrounding community, or if there would be a substantial loss in the community tax base.

Proposed Action Alternative

Socioeconomic Impacts: The proposed improvements will not result in the division or disruption of existing communities, nor will they interfere with orderly planned development. The project area is contained entirely on airport property. A beneficial impact resulting from the closure of Runway 17-35 is the reduction of noise and light pollution to the north of the airport as well as to the south in the area of the proposed Mesa del Sol development.

Environmental Justice: As shown in the analysis in Section 3.3.4 of Chapter Three, there are occurrences of high percentage of minority or low-income populations within the vicinity of the airport. In accordance with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, public involvement was sought throughout the EA process and analysis was undertaken to determine whether these areas would experience a disproportionately high and adverse impact. Measures taken to ensure meaningful input by minority and low-income populations included advertising the public information workshop and holding the workshop in an accessible location for the minority and low income area.

It was determined that the environmental justice areas would not be directly impacted by the proposed closure of Runway 17-35. Impacts resulting from the implementation of the Proposed Action alternative relate primarily to changes in the noise exposure resulting from airport operations. To address these impacts, a gridpoint analysis was undertaken at multiple locations surrounding the airport depicted on **Exhibits 4A** and **4B**. The results of this gridpoint analysis, as discussed in Section 4.2.7 of this chapter, indicate that the Proposed Action alternative will result in a decrease in noise exposure for residential land uses north of the airport and no increase in noise exposure for land uses west and northeast of the airport. The closure of Runway 17-35 is also not anticipated to significantly increase aircraft overflights of the neighbourhoods surrounding the airport.

Children's Environmental Health and Safety: The closure of Runway 17-35 will not significantly change operations at the airport. Runway 17-35 is used on a minimal basis by small general aviation aircraft weighing 12,500 pounds or less and by military aircraft that approach only from the south over vacant land. After the closure of Runway 17-35, general aviation aircraft will shift their use to other runways with minimal impact and the military aircraft will shift to Runway 30, which has an approach from the southeast also over vacant land. Access to substances which could affect a child's health or safety will still be limited. The airport would continue to be restricted to access by authorized persons, and there would be no increase in the possibility of contact with any substances that would cause harm or risk.

The proposed alternative does not result in the displacement of residences, businesses, or agricultural operations, or result in the division or disruption of established communities. Furthermore, no disruption of orderly or planned development is anticipated as a result of the proposed alternative or other projects planned within the airport environs.

No Action Alternative

Socioeconomic impacts and impacts to children's environmental health and safety issues are not anticipated with implementation of the No Action alternative as the airport would continue to operate in a manner similar to its current condition. Since the property ownership around the airport would remain unchanged, it is expected that there would be no impacts to low-income or minority population areas.

Analysis and Mitigation

Implementation of the Proposed Action or No Action alternative will not exceed the thresholds of significance previously discussed in this section.

4.2.9 Water Quality

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc.

Thresholds of Significance

Per FAA Order 1050.1E, Appendix A, Paragraph 17.3, water quality regulations and issuance of permits will normally identify any deficiencies in the proposed development with regard to water quality or any additional information necessary to make judgments on the significance of impacts. Difficulties in complying with needed permits for the project, such as NPDES or Section 404 permits, typically indicate a potential for significant water quality impacts.

Proposed Action

Demolition of Runway 17-35 may have limited, short-term effects on surface water quality, particularly an increase in suspended sediments during and shortly after precipitation events in the demolition phase. Prior to demolition that disturbs one acre, the City of Albuquerque will need to obtain an NPDES Construction General Permit (CGP). No difficulties in obtaining such a permit have been identified. Furthermore, short-term water quality impacts will be mitigated through implementation of BMPs.

No Action Alternative

Implementation of the No Action alternative will result in activities to reconstruct Runway 17-35 to its present length and width resulting in no new impermeable surfaces. An NPDES CGP will also need to be acquired for this action.

Analysis and Mitigation

Implementation of either alternative at Albuquerque International Sunport may have limited, short-term effects on surface water quality, particularly an increase in suspended sediments during and shortly after precipitation events in the demolition/construction phase. These impacts are discussed in greater detail within Section 4.2.2, Construction Impacts.

No long-term water quality impacts are expected with implementation of the Proposed Action alternative. Subsurface water will not be required for the project; therefore, no adverse impacts to groundwater resources are anticipated. The proposed improvements will not significantly alter rainfall drainage patterns or contaminate or otherwise adversely affect the public water supply, water treatment facilities, or water distribution centers.

4.3 CUMULATIVE IMPACTS

Analysis of the cumulative overall impact of a Proposed Action alternative and the consequences of subsequent related actions is required to determine the significance of the impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the actions' originator.

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Cumulative impact analysis considers connected actions, projects related and dependent upon the completion of the proposed airport project, and similar actions or projects having a common geography or timing that provide a basis for considering their impact together with impacts related to the proposed airport project. Cumulative impacts are evaluated on three time horizons: past actions, present actions, and reasonably foreseeable actions. Due to limited availability of information regarding past actions, this portion of the analysis is limited to the past five years. Present actions are those projects which are ongoing and will continue during the implementation of the Proposed Action. Reasonably foreseeable actions, for the purposes of this project, are those that have received local approval for implementation, such as a building permit. Planned projects, such as those outlined within a community's General Plan or Specific Plan, are not considered reasonably foreseeable as part of this analysis.

Specific thresholds for cumulative impacts are not established in FAA Order 1050.1E as the significance threshold varies according to the affected resources. In evaluating cumulative impacts, the impact of the proposed action should be added to the impacts of other projects to determine if the significant impact threshold will be exceeded.

AIRPORT DEVELOPMENT

As discussed in Chapter Three, a number of projects, on and off airport property, have been undertaken or are planned to be undertaken in the near-term. These projects include the following:

- Rehabilitation of the terminal apron
- Upgraded communications system
- Upgraded flight information display system
- Rehabilitation of the terminal public spaces
- Rehabilitation of the terminal mechanical, electrical, and fire systems
- Construction of a customs/federal inspection station
- Rehabilitation of the terminal passenger screening area
- Mesa del Sol developments south of the airport, including the construction of film and television production studios, an outdoor concert venue, and various businesses. Plans call for residential, retail, office and industrial, park and open space, and school developments.
- Commercial developments near the terminal building, including hotel development.

No agencies indicated concerns regarding potential cumulative impacts during the agency scoping process undertaken at the onset of this EA. It has been determined that the following resources are not present and require no further analysis: Section 4(f) properties, environmental justice areas, wetlands, coastal resources, farmland, floodplains, and wild and scenic rivers.

Resource issues that are appropriate for analysis under a cumulative impact assessment are addressed below. These categories were identified for cumulative impact analysis because of the impacts caused by the Proposed Action. Much of the discussion contained within the following sections is also reflected within the various impact analyses in Section 4.2. The discussions have been consolidated within this section to summarize the qualitative cumulative impact analysis which was completed for the project.

AIR QUALITY

The geographic scope of the air quality analysis is limited to the City of Albuquerque. Demolition impacts will be short-term and can be attributed to vehicular emissions related to demolition, as well as dust resulting from ground disturbance. It is not expected that these projects, cumulatively, will result in air quality impacts which exceed the stated threshold of significance.

WATER QUALITY, WETLANDS, AND WATERS OF THE U.S.

Due to the project's proposed decrease of impervious runway surface, a modification of the existing NPDES permit will be required as well as an NPDES construction permit. Reasonably foreseeable projects may also have individual impacts on water supply and water quality. These impacts will be subject to regulatory agency permit review and approval. Permit issuance verifies agency concurrence with the proposed resource impacts as not being individually significant.

During this process of obtaining and modifying permits, review by agencies having jurisdiction over water supply and quality issues will be conducted. The permit programs implemented by these agencies take into account the cumulative impact of actions and projects on the regulated resources. Periodic program reviews are conducted to ensure that the loss of regulated resources authorized through the

permit programs do not constitute an individual or cumulatively unacceptable impact. The Proposed Action alternative, as well as all reasonably foreseeable actions, will be subject to this regulatory review process, as applicable. In reviewing the additional projects planned in the project area, no new impacts to ephemeral streams are anticipated.

NOISE

The Proposed Action alternative does not result in noise impacts which exceed FAA's threshold of significance. Growth in air carrier, air cargo, and general aviation traffic at the airport will likely introduce new aircraft to the airport's fleet mix. The introduction of these aircraft is reflected within the facility forecasts and is, therefore, accounted for within the noise analysis described in Section 4.2

COMPATIBLE LAND USE

The proposed airport improvement is being advanced by the City of Albuquerque Aviation Department, and much of the land surrounding the airport is under the jurisdiction of the City of Albuquerque. To ensure that future development around the airport is compatible with airport operations, the Aviation Department is in regular contact with other city departments as well as any developers proposing projects within the airport vicinity. When needed, the airport requests that avigation easements be placed upon neighboring property to ensure that future landowners are aware of the operations at the airport. Currently, the City's zoning, land use policies, and ordinances encourage land use and development that is compatible with airport operations. Based on this information, no cumulative land use or zoning impacts are anticipated, and all reasonably foreseeable development in the area around the airport will be compatible with airport operations.

SOCIOECONOMIC AND SECONDARY (INDUCED) IMPACTS

The Proposed Action alternative does not result in the displacement of residences, businesses, or agricultural operations, or result in the division or disruption of established communities. Current and reasonably foreseeable development within the Albuquerque area is being planned under the current population, employment, income, and economic growth trends. Albuquerque International Sunport directly and indirectly influences the land use and economic structure of the City of Albuquerque metropolitan area. It is reasonable to assume that the population, income, and economic growth trends of the past will continue into the future under the proposed development, consistent with the city's land use and development planning policies and objectives.

FISH, WILDLIFE, AND PLANTS

The Proposed Action alternative will not impact unique or significant biological features or habitat that supports rare species or promotes the spread of invasive species or noxious weeds. The reasonably foreseeable projects are proposed for locations that are consistent with the airport's master plan and the city's zoning and land use policies. These plans and policies have been developed in consultation with various environmental resource agencies. These agencies have varied oversight and protection powers over significant biotic communities under their respective jurisdictions. No significant cumulative impact to biotic communities is anticipated.

Likewise, the Proposed Action alternative is not likely to result in a trend toward federal listing for the list of species identified through coordination with the U.S. Fish and Wildlife Service and the New Mexico Department of Game and Fish. The reasonably foreseeable projects are proposed for areas currently zoned for respective development, on airport property, or land on or adjacent to existing development.

NATURAL RESOURCES AND ENERGY SUPPLY

The Proposed Action alternative will not result in a significant increase in use of energy or natural resources over current trends. Projected demands for energy and natural resources will increase commensurate with the growth of population. The Proposed Action alternative and reasonably foreseeable projects will account for only a minor portion of the projected growth and, therefore, will not result in a significant cumulative impact on energy and natural resources.

LIGHT EMISSIONS AND VISUAL IMPACTS

The proposed closure of Runway 17-35 would eliminate existing runway lights, reducing light emissions from the airport. The closure of Runway 17-35 will also reduce the number of overflights north of the airport mitigating visual impacts on residential land uses. As a result, no cumulative impacts due to light emissions and visual impacts are reasonably foreseeable.

CONSTRUCTION IMPACTS

Construction activities result in temporary impacts with recovery of the natural and social environments after construction is completed. Issues of more long-term cumulative impacts to the natural, social, economic, and cultural environments were discussed previously under this section. During demolition of Runway 17-35, temporary demolition-related increases in noise levels, fugitive dust, erosion and sedimentation, and traffic congestion are anticipated with recovery upon completion of demolition. No significant cumulative construction impacts are anticipated as the project evaluated within this EA and the projects planned to occur in the airport environs will not occur concurrently.

Chapter Five

PREPARERS AND REFERENCES

Chapter Five
DOCUMENT PREPARERS AND REFERENCES

Persons responsible for preparation of this Environmental Assessment document and significant supporting background analysis and materials are listed below.

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Eric Pfeifer	Airport Master Planning, Environmental Analysis and Documentation	B.S., Airport Administration; Masters, Business Administration; LEED Green Associate. Six years' experience in airport master planning; environmental documentation of various development projects.
FAA		
Tim Tandy	Environmental Scientist	1975, B.S., Biology, Texas Wesleyan College 1978, M.S. Zoology, Texas Tech University. 23 years' experience in NEPA analysis/documentation and related federal environmental requirements.
Molzen-Corbin & Associates		
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Jeppesen		
David M. Downing	Fast-Time Simulation	Aviation Studies, University of San Mateo. 25 years' experience in airline operations; five years' experience in airfield simulation.
Tony Weatherington	Fast-Time Simulation	B.S., Aviation Administration, Lewis University. Eight years' experience in airfield, airspace, terminal, and general fast-time simulation.

REFERENCES

The following documents and websites were utilized for the preparation of this EA.

Federal Aviation Administration (FAA), FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, March, 2006

FAA, FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions,* April, 2006

FAA, *Environmental Desk Reference for Airport Actions*, October 2007

FAA Advisory Circular (AC) 150/5300-13*, Airport Design*

U.S. Department of Transportation, *Airport/Facility Directory,* August 2009

Kimley-Horn and Associates, *Runway 17-35 Pavement Condition Report and Rehabilitation Analysis*, March 2010

Jeppesen, *TAAM Consulting for Albuquerque New Mexico,* February 2010

United Stated Department of Agriculture – Natural Resources Conservation Service, NCSS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/

United States Census Bureau,
http://www.census.gov/

U.S. Environmental Protection Agency, *EJView,*
http://epamap14.epa.gov/ejmap/entry.html

U.S. Environmental Protection Agency, Green Book Nonattainment Areas for Criteria Pollutants,
http://www.epa.gov/oar/oaqps/greenbk/

U.S. Environmental Protection Agency, National Priorities List,
http://www.epa.gov/superfund/sites/npl/

U.S. Fish and Wildlife Service, *Endangered Species List*,
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

Appendix A

PROJECT SCOPING MATERIALS AND AGENCY COORDINATION

Appendix A
PROJECT SCOPING MATERIALS AND AGENCY COORDINATION

The purpose of this appendix is to provide additional background information regarding the projects proposed within this Environmental Assessment (EA). At the onset of the EA, letters were sent to the entities listed below seeking input regarding potential environmental resources which could be impacted by the proposed airport improvements. A copy of the letter sent to them and the response received (if any) follows the table of contents within this appendix.

Response letters were received from the following:

- City of Albuquerque, Planning Department. The City of Albuquerque Planning Department commented that the closure of Runway 17-35 would have a positive impact on surrounding neighborhoods by reducing intensity of aircraft noise. It was also stated that the closure of the runway would allow for the development of a new passenger terminal facility resulting in improved access and circulation.
- State of New Mexico, Department of Game & Fish. No significant impacts to wildlife or sensitive habitats are anticipated by the State of New Mexico Department of Game & Fish.
- United States Environmental Protection Agency (EPA). The EPA had no comments to offer.
- Department of the Army, Albuquerque District, Corps of Engineers (COE). The COE determined that the project would not involve the discharge of dredged and fill material into waters of the United States, including wetlands. The project would also not impact any navigable waters of the United States. No Department of the Army authorization would be required.

FEDERAL CONTACTS:

Ed Singleton
District/Field Office Manager
Bureau of Land Management
Albuquerque District Office
435 Montano Rd., NE
Albuquerque, NM 87107-4935

Signa Larralde
Planning and NEPA
Bureau of Land Management
New Mexico State Office
1474 Rodeo Road
Sante Fe, NM 87505

Richard Greene
Regional Administrator
Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Dr. Joseph Sanchez, Director
United States Department of the Interior
National Park Service
Intermountain Region
Petroglyph National Monument
6001 Unser Blvd. NW
Albuquerque, NM 87110

Dennis Alexander
State Conservationist
U.S. Department of Agriculture
Natural Resource Conservation Service
6200 Jefferson NE
Albuquerque, NM 87109

Bill Walker, Regional Director
Southwest Regional Office
Bureau of Indian Affairs
1001 Indian School Road, NW
P.O. Box 26567
Albuquerque, NM 87125-6567

Donald Borda, Chief
Regulatory Branch
Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, NM 87109-3435

David Henry, Geologist
Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, NM 87109-3435
(RE: FUDS sites)

STATE CONTACTS:

Mary Uhl
Air Quality Bureau
New Mexico Environment Department
P.O. Box 26110
1190 St. Francis Dr.
Suite #N4050
Santa Fe, NM 87502

Jim Norton
Environmental Protection Division
New Mexico Environment Department
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Santa Fe, NM 87502

Bureau Chief
Surface Water Quality Bureau
New Mexico Environment Department
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Suite #N4050
Santa Fe, NM 87502

Bill Olson
Groundwater Quality Bureau
New Mexico Environment Department
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Santa Fe, NM 87502

Jeremy Kruger
New Mexico State Land Office
1009 Bradbury SE, #21
Albuquerque, NM 87106

Tom Baca
Aviation Division Director
New Mexico Department of Transportation
P.O. Box 9830
Albuquerque, NM 87119

Larry Velasquez
District III Engineer
New Mexico
Department of Transportation
7500 Pan American Freeway NE
P.O. Box 91750
Albuquerque, NM 87102

Matt Wunder, Division Chief
New Mexico Game and Fish
Conservation Services Division
P.O. Box 25112
Santa Fe, NM 87504

LOCAL CONTACTS:

Richard Dourte
City Engineer
City of Albuquerque
600 2nd St., NW
Albuquerque, NM 87102

Richard Dineen
Planning Director
City of Albuquerque
600 2nd St., NW
Albuquerque, NM 87102

Isreal Tavarez
Environmental Engineering Manager
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Jay Evans
Director
Parks and Recreation Department
City of Albuquerque
1801 4th Street, NW
Albuquerque, NM 87102

Tom Zdunek
Deputy County Manager, Public Works
Bernalillo County
2400 Broadway SE, Building N
Albuquerque, NM 87102

Julie M. Baca
Deputy County Manager, Community Services
Bernalillo County
One Civic Plaza, NW
Albuquerque, NM 87102

Chris Blewett
Director of Transportation and Planning Services
Mid-Region Council of Governments
809 Copper Avenue, NW
Albuquerque, NM 87102

Letter **Page**

July 14, 2009

Re: Environmental Assessment for the Proposed Closure of Runway 17-35 at the Albuquerque International Sunport, Albuquerque, New Mexico

Dear :

Coffman Associates has been contracted by the City of Albuquerque, New Mexico to prepare an Environmental Assessment (EA) for the proposed closure of Runway 17-35 at the Albuquerque International Sunport (Sunport). The EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the FAA as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures,* and FAA Order 5050.4B*, National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions*. The Federal Aviation Administration (FAA) will act as the lead agency for the project. (Please note: your agency was originally consulted regarding the proposed runway closure in November 2007. Due to the lapse in time since the original consultation, the agency coordination process is being revisited.)

The proposed runway closure is being undertaken in accordance with recommendations included in the *2003 Albuquerque International Sunport Master Plan*. During the master planning process, it was determined that Runway 17-35 needed to be closed for a number of factors, including the following:

- **Safety**. Runway 17-35 intersects all other runways, increasing the opportunity for runway incursions.
- **Wind coverage**. 50 years of wind data indicated that Runway 17-35 is needed for less than 1,400 operations per year which amounts to fewer than 2 percent of operations at the airport.
- **Capacity**. Increased use of Runway 17-35 would lower airfield capacity and increase aircraft delays.
- **Costs**. At the time of the master plan preparation, short-term rehabilitation costs were estimated at $27.0 million. Since that time, the runway has continued to degrade and would require rehabilitation to remain in service. Neither the sponsor nor the FAA considers the rehabilitation to be financially feasible, especially when considered in context with the above considerations.

The purpose of this letter is to solicit your comments or concerns regarding potential environmental or social impacts resulting from the closure of Runway 17-35 at the Sunport. To assist with your review, two exhibits are enclosed which depict the location of the Sunport as well as the general airfield layout. The runway proposed for removal is noted with a red hatch on Exhibit B.

Finally, we are also seeking input regarding the potential cumulative impact of the runway closure. Any information you can provide regarding proposed or completed projects in the vicinity of the Sunport would be appreciated.

Please send any written comments to me by August 30, 2009, at the address on the letterhead. As another option, you may fax or e-mail your comments to:

FAX: 816.524.2575
E-mail: mwaller@coffmanassociates.com

If you have any questions or need additional information, please feel free to contact me at (816) 524-3500. Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Enclosure

C: Mr. James Hinde, City of Albuquerque
Mr. Tim Tandy, FAA

08EA02-A-6/30/09

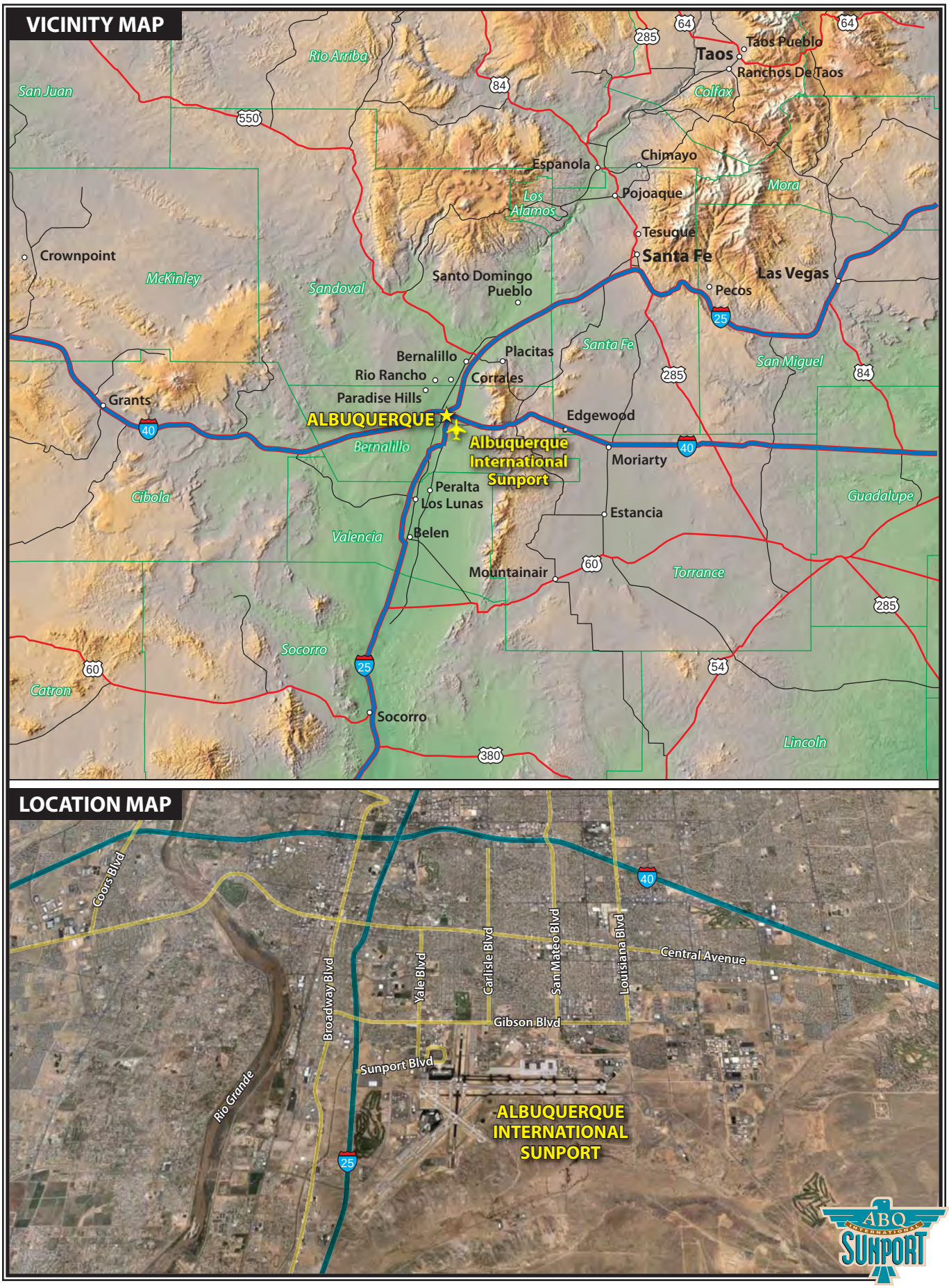
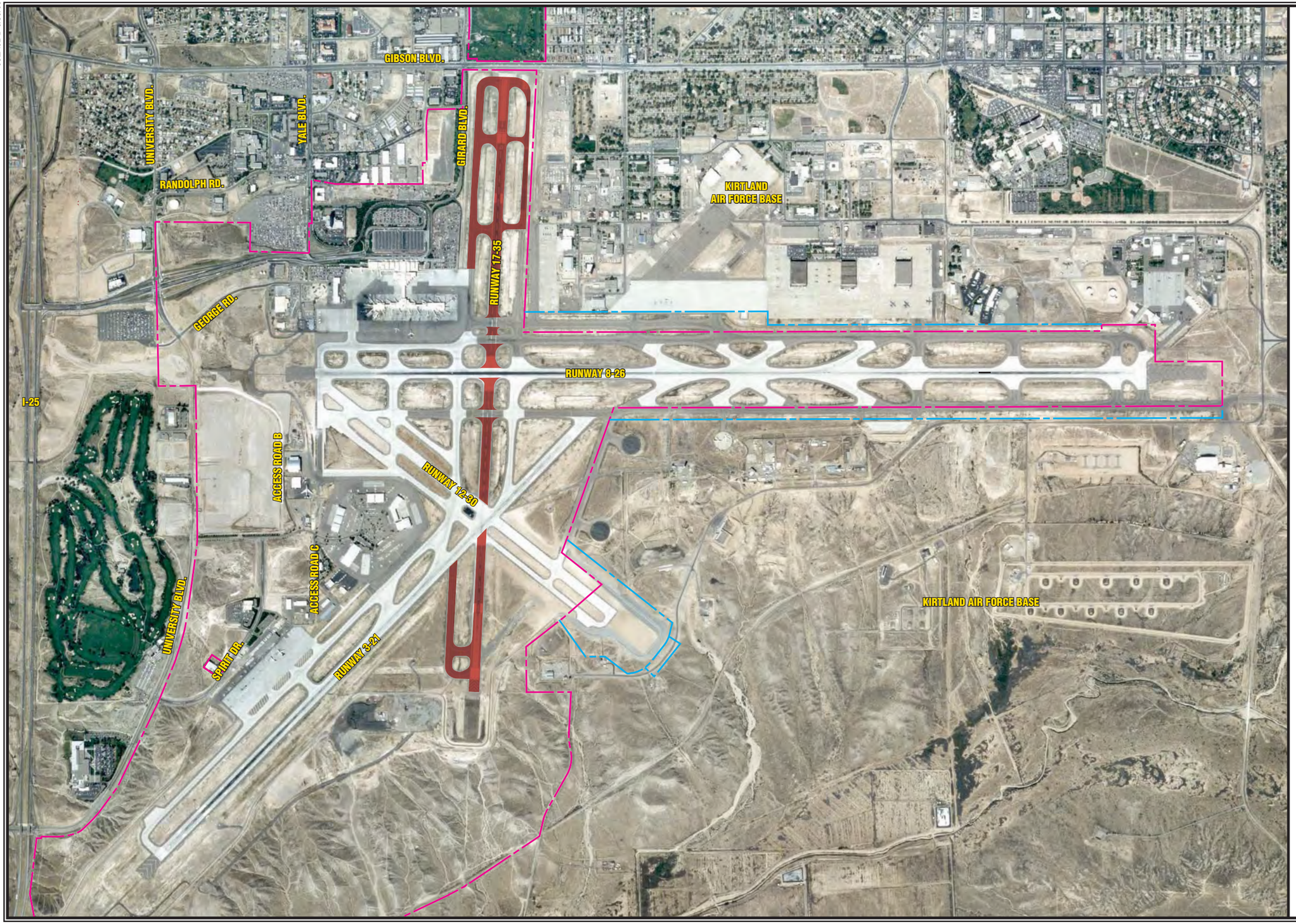


Exhibit A
AIRPORT VICINITY MAP

08EA02-B-6/30/09



LEGEND

- Airport Property Line
- Lease Line
- Pavement to be Removed

NORTH

0 1,600

SCALE IN FEET

DATE OF PHOTO: 9-30-99

Exhibit B
PROPOSED ACTION

CITY OF ALBUQUERQUE

July 24, 2009

Ms. Molly Waller
Coffman Associates
237 NW Blue Parkway, Suite 100
Lee's Summit, MO 64063

Re: Proposed Closure of Runway 17-35 at the Albuq. International Sunport

Dear Ms. Waller:

Thank you for giving us the opportunity to comment on the proposed closure of Runway 17-35 at the Albuquerque International Sunport. As you stated in your previous letter, the closure of Runway 17-35 comports with the goals of the *2003 Albuquerque International Sunport Master Plan* which was adopted by the City Council in March of 2003. For safety and financial reasons, this runway is recommended to be closed.

Closure of the runway will have a positive impact on surrounding neighborhoods by reducing intensity of aircraft noise. In addition, closure of the runway will allow development of a new passenger terminal on the site, which will result in improved access and circulation. The proposed closure will not affect any current or proposed projects in the vicinity of the Sunport.

If you need additional information, please do not hesitate to contact me at 924-3860.

Sincerely,

Richard Dineen, AIA
Director, Planning Department

cc: Nick Bakas, Director, Aviation Department

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

GOVERNOR
Bill Richardson

DIRECTOR AND SECRETARY
TO THE COMMISSION
Tod Stevenson

Robert S. Jenks, Deputy Director

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way
Post Office Box 25112
Santa Fe, NM 87504
Phone: (505) 476-8008
Fax: (505) 476-8124

Visit our website at www.wildlife.state.nm.us
For information call: 505/476-8000
To order free publications call: 1-800-862-9310

STATE GAME COMMISSION

Jim McClintic, Chairman
Albuquerque, NM

Sandy Buffett, Vice-Chairwoman
Santa Fe, NM

Dr. Tom Arvas, Commissioner
Albuquerque, NM

Alfredo Montoya, Commissioner
Alcalde, NM

Kent A. Salazar, Commissioner
Albuquerque, NM

M.H. "Dutch" Salmon, Commissioner
Silver City, NM

Leo V. Sims, II, Commissioner
Hobbs, NM

20 July 2009

Molly Waller
Coffman Associates
237 NW Blue Parkway, Suite 100
Lee's Summit, MO 64063

Re: Proposed Closure Runway 17-35 Albuquerque International Sunport; NMDGF No. 12849

Dear Ms. Waller,

In response to your letter dated 14 July 2009 regarding the above referenced project the Department of Game and Fish (Department) does not anticipate significant impacts to wildlife or sensitive habitats. For your information, we have enclosed a list of sensitive, threatened and endangered species that occur in Bernalillo County.

For more information on listed and other species of concern, contact the following sources:

1. BISON-M Species Accounts, Searches, and County lists: http://www.bison-m.org
2. Habitat Handbook Project Guidelines: http://wildlife.state.nm.us/conservation/habitat_handbook/index.htm
3. For custom, site-specific database searches on plants and wildlife, go to http://nhnm.unm.edu, then go to Data, then to Free On-Line Data, and follow the directions
4. New Mexico State Forestry Division (505-476-3334) or http://nmrareplants.unm.edu/index.html for state-listed plants
5. For the most current listing of federally listed species **always** check the U.S. Fish and Wildlife Service at (505-346-2525) or http://www.fws.gov/southwest/es/NewMexico/SBC.cfm.

Thank you for the opportunity to review and comment on your project. If you have any questions, please contact me at (505) 476-8114 or terra.manasco@state.nm.us.

Sincerely,

Terra Manasco
Assistant Chief, Conservation Services Division
Technical Guidance Section

TLM

xc: Wally Murphy, Ecological Services Field Supervisor, USFWS
Brian Gleadle, NW Area Operations Chief, NMDGF

NEW MEXICO WILDLIFE OF CONCERN
BERNALILLO COUNTY

For complete up-dated information on federal-listed species, including plants, see the US Fish & Wildlife Service NM Ecological Services Field Office website at http://www.fws.gov/ifw2es/NewMexico/SBC.cfm. For information on state-listed plants, contact the NM Energy, Minerals and Natural Resources Department, Division of Forestry, or go to http://nmrareplants.unm.edu/. If your project is on Bureau of Land Management, contact the local BLM Field Office for information on species of particular concern. If your project is on a National Forest, contact the Forest Supervisor's office for species information.

Common Name	Scientific Name	NMGF	US FWS	critical habitat
Rio Grande Chub	Gila pandora	s		
Rio Grande Silvery Minnow	Hybognathus amarus	E	E	Y
Brown Pelican	Pelecanus occidentalis	E		
Neotropic Cormorant	Phalacrocorax brasilianus	T		
Bald Eagle	Haliaeetus leucocephalus	T	T	
Northern Goshawk	Accipiter gentilis	s	SOC	
Common Black-Hawk	Buteogallus anthracinus	T	SOC	
Aplomado Falcon	Falco femoralis	E	Exp	
Peregrine Falcon	Falco peregrinus	T	SOC	
Mountain Plover	Charadrius montanus	s	SOC	
Black Tern	Chlidonias niger surinamensis		SOC	
Yellow-billed Cuckoo	Coccyzus americanus	s	C	
Mexican Spotted Owl	Strix occidentalis lucida	s	T	Y
Burrowing Owl	Athene cunicularia		SOC	
Black Swift	Cypseloides niger	s		
Broad-billed Hummingbird	Cynanthus latirostris	T		
White-eared Hummingbird	Hylocharis leucotis	T		
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	E	Y
Loggerhead Shrike	Lanius ludovicianus	s		
Bell's Vireo	Vireo bellii	T	SOC	
Gray Vireo	Vireo vicinior	T		
Baird's Sparrow	Ammodramus bairdii	T	SOC	
Western Small-footed Myotis Bat	Myotis ciliolabrum melanorhinus	s		
Yuma Myotis Bat	Myotis yumanensis yumanensis	s		
Occult Little Brown Myotis Bat	Myotis lucifugus occultus	s		
Long-legged Myotis Bat	Myotis volans interior	s		
Fringed Myotis Bat	Myotis thysanodes thysanodes	s		
Spotted Bat	Euderma maculatum	T		
Pale Townsend's Big-eared Bat	Corynorhinus townsendii pallescens	s	SOC	
Big Free-tailed Bat	Nyctinomops macrotis	s		
Gunnison's Prairie Dog	Cynomys gunnisoni	s		
New Mexican Jumping Mouse	Zapus hudsonius luteus	E	SOC	
Red Fox	Vulpes vulpes	s		
Ringtail	Bassariscus astutus	s		
Black-footed Ferret	Mustela nigripes		E	
Western Spotted Skunk	Spilogale gracilis	s		
Socorro Mountainsnail	Oreohelix neomexicana	s		
Slate Millipede	Comanchelus chihuanus		SOC	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

AUG 06 2009

Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Parkway
Suite 100
Lee's Summit, MO 64063

RE: Proposed Closure of Runway 17-35 Albuquerque International Sunport, Albuquerque, NM

Dear Ms. Waller:

The Environmental Protection Agency (EPA) has received the above referenced Environmental Assessment (EA) and proposed Draft Finding of No Significant Impact.

We have no comments to offer. Thank you for your coordination.

Sincerely yours,

Cathy Gilmore

Cathy Gilmore, Chief
Office of Planning and
Coordination (6EN-XP)

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109
505-342-3262
FAX 505- 342-3498

August 14, 2009

REPLY TO
ATTENTION OF:

Regulatory Division
New Mexico/Texas Branch

SUBJECT: Action Number SPA-2009-00423-ABQ, Environmental Assessment for proposed Closure of Runway 17-35 at the Albuquerque International Sunport

Mr. James Hinde
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103-1293

Dear Mr. Hinde:

The U.S. Army Corps of Engineers (Corps) is in receipt of a letter dated July 14, 2009, by Coffman Associates, concerning a proposal to close Runway 17-35 at the Albuquerque International Sunport in the City of Albuquerque, Bernalillo County, New Mexico. The activity involves closure of Runway 17-35 due to factors including safety, wind coverage, capacity and costs. We have assigned Action No. SPA-2009-00423-ABQ to this activity. To avoid delay, please include this number in all future correspondence concerning this project.

We have reviewed this project in accordance with Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899 (RHA). Under Section 404, the Corps regulates the discharge of dredged and fill material into waters of the United States, including wetlands. The Corps responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States. Based on your description of the proposed work, other information available to us, and current regulations and policy, we have determined that this project will not involve any of the above activities. Therefore, it will not require Department of the Army authorization under the above laws. However, it is incumbent upon you to remain informed of any

changes in the Corps Regulatory Program regulations and policy as they relate to your project.

The Corps based this decision on an approved jurisdictional determination (JD) that there are no waters of the United States on the project site. The basis for this approved jurisdictional determination (JD) is that the project site contains entirely uplands. The JD form is available at http://www.spa.usace.army.mil/reg/Jurisdictional_Determinations/jurisdictional_determinations.asp. This approved JD is valid for a period of no more than five years from the date of this letter unless new information warrants revision of the delineation before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the Notification of Administration Appeal Options and Process and Request For Appeal (NAAOP-RFA). This form is available at http://www.spa.usace.army.mil/reg/Administrative%20Appeals/appeals_process.asp. If you elect to appeal this approved JD, you must complete Section II (Request For Appeal or Objections to an Initial Proffered Permit) of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, 1455 Market Street, Room 1760, San Francisco, CA 94103-1399 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions concerning our regulatory program, please contact me at 505-342-3216 or by e-mail at Kelly.E.Allen@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Kelly E. Allen
Project Manager

Copies furnished:

Ms. Molly Waller
Coffman Associates
237 NW Blue Parkway, Ste 100
Lees Summit, Missouri 64063-1888

Appendix B

AVIATION DEMAND FORECASTS

Appendix B
AVIATION DEMAND FORECASTS

This chapter is intended to update projections of aviation demand for use in the environmental assessment. Current air transportation trends will be reviewed and compared with earlier planning forecasts and Federal Aviation Administration (FAA) projections before selecting a preferred planning forecast through 2030.

PASSENGER SERVICE FORECASTS

To properly evaluate airport needs and impacts related to present and future passenger airline activity, two basic elements must be forecast: annual enplaned passengers and annual aircraft operations. Annual enplaned passengers are the most basic indicator of demand for commercial service activity. From a forecast of annual enplanements, aircraft operations can be projected based upon behavioral factors characteristic of Albuquerque International Sunport (ABQ) or the airline industry as a whole.

The following analysis begins with a discussion of national trends and outlooks for the economy and what it means for the airline industry. Local and regional socioeconomic trends are discussed next. Each of these factor into the forecast analysis for enplanements and operations that follows.

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public.

The current edition when this forecast was prepared was FAA *Aerospace Forecasts - Fiscal Years (FY) 2009-2025*, released on March 31, 2009. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses were applied to the outlook for aviation growth in international markets.

Economic Outlook

The aviation industry in the United States has experienced an event-filled decade. Since the turn of the century, the industry has faced the impacts of the events of September 11, 2001, scares from pandemics such as SARS, the bankruptcy of four network air carriers, all-time high fuel prices, and a serious economic downturn with global ramifications. The Bureau of Economic Research has determined that the current economic recession in the United States began in December 2007. Eight of the world's top 10 economies were in recession by January 2009.

The end of the recession is still to be determined, and many economists are suggesting it could be the deepest recession since World War II. The average length of periodic recessions since that time has been 10 months. This recession does not face the high inflationary environment of the recession in the early 1980s or the high energy costs of the mid-1970s recession. There were more than 3.8 million jobs lost in the first 14 months of the recession, with unemployment rising to eight percent, which is three percent above the long term norm.

The most recent U.S. Administration forecast used in preparing the FAA Aerospace Forecasts anticipated the recession in the U.S. would end by the third quarter of FY 2009 (April-June), with a modest recovery over the next six quarters. Economic growth measured in gross domestic product (GDP) is projected to go from a -4.3 percent in the second quarter of FY 2009 to +3.8 percent in the third quarter of 2010. Between 2010 and 2013, GDP is projected to grow at rates ranging from 2.4 percent in 2010 to 4.5 percent in 2012. Economic growth is projected to slow to an average of 2.6 percent per year beyond 2013. The following subsection examines the FAA's forecasts for commercial air service. Later, in their appropriate sections, the FAA forecasts for air cargo and general aviation will be discussed.

U.S. Commercial Aviation Forecast

After posting a net profit in 2007 for the first time since the events of 9/11, commercial aviation faced some significant challenges in 2008. Fuel prices became highly unpredictable at a time

when a downturn in the economy was hitting the industry. U.S. carriers experienced a net loss for the year, with the same expected for foreign carriers. The losses were managed somewhat with moderate fare increases and a decrease in capacity (measured in available seat-miles or ASMs).

The FAA forecasts carrier capacity and passenger demand to decline even further in 2009. Overall capacity is forecast to decline 6.7 percent, with mainline domestic carriers forecast to decline 9.5 percent. Regional airline capacity is expected to decline 5.5 percent. Internationally, capacity is expected to decline approximately 1.0 percent with slow growth in the Atlantic and Latin markets, with shrinkage in the Pacific market as well. Over the long term, system capacity was projected to grow at an average of 3.1 percent annually.

Domestically, revenue passenger miles (RPMs) were forecast to decline by 8.9 percent in 2009. As the economy recovers, domestic RPMs are expected to grow by 2.7 percent in 2010. Continued economic growth and declining real yields are expected to generate an annual average RPM increase of 3.4 percent from 2010 through 2025.

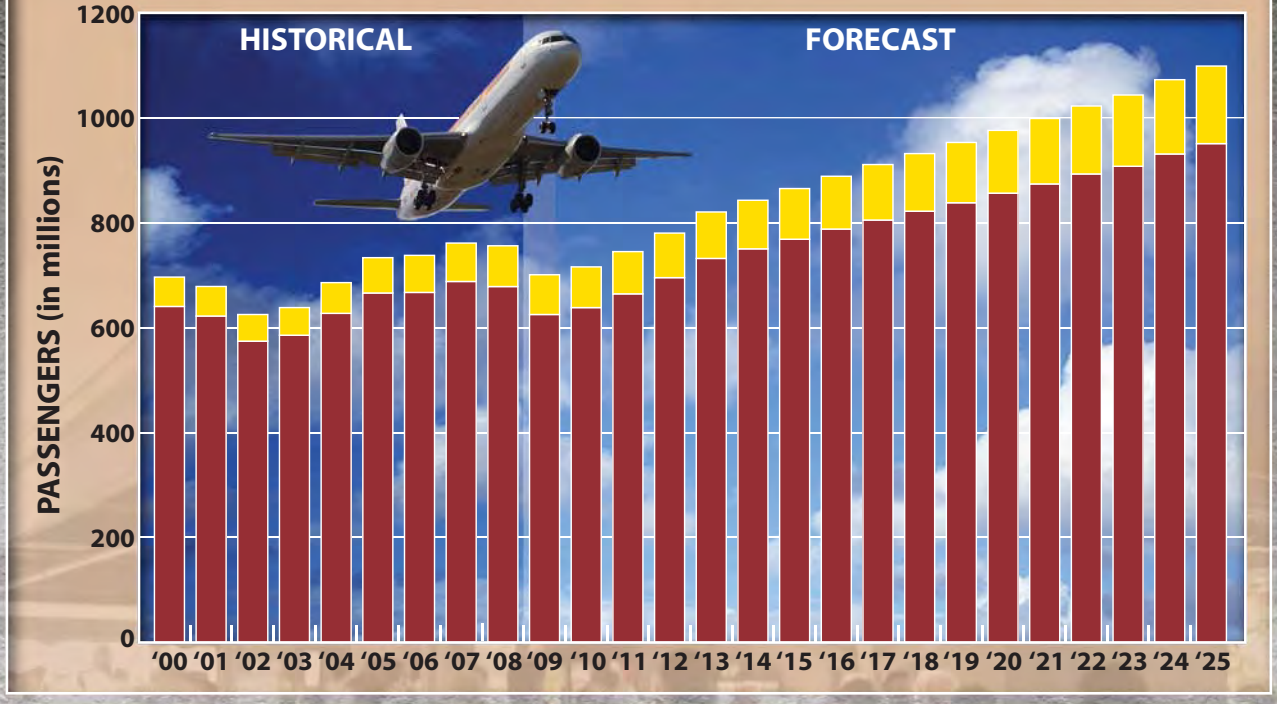
Domestic enplanements are forecast to decline by 7.8 percent in 2009, with volume growing by 2.0 percent as the economy begins to recover. For the long term beyond 2010, domestic enplanements are projected to grow at an average of 2.7 percent per year.

International passenger traffic between the U.S. and the rest of the world actually grew by 2.8 percent in 2008. The worldwide recession, however, is expected to reduce international passengers to and from the U.S. by 0.9 percent in 2009. An economic recovery is expected to bring 4.2 percent growth in 2010. After 2010, international passenger growth is expected to average 4.6 percent per year. **Exhibit B1** depicts the history and projected growth in U.S. passenger enplanements.

Another factor that could influence demand in Albuquerque by 2015 is the agreement to phase out the Wright Amendment, which originally limited nonstop flights from Love Field in Dallas to airports in Texas and the four adjoining states (New Mexico, Oklahoma, Arkansas, and Louisiana). Flights into Love Field were also limited to those originating from the same airports. Since 1997, four additional states (Mississippi, Alabama, Kansas, and Missouri) were granted non-stop flights to and from Love Field. Even with this change, ABQ has been a gateway to and from Love Field for destinations west.

On October 13, 2006, a federal bill became law allowing one-stop and connecting service to airports outside the "Wright Zone." The bill also calls for the complete phase-out of the Wright Amendment in 2014 when all distance restrictions from Love Field will be dropped. This will allow the potential for non-stop flights from outside the Wright Zone; however, the total number of gates available at Love Field will be restricted.

U.S. SCHEDULED COMMERCIAL AIR CARRIER PASSENGER ENPLANEMENTS

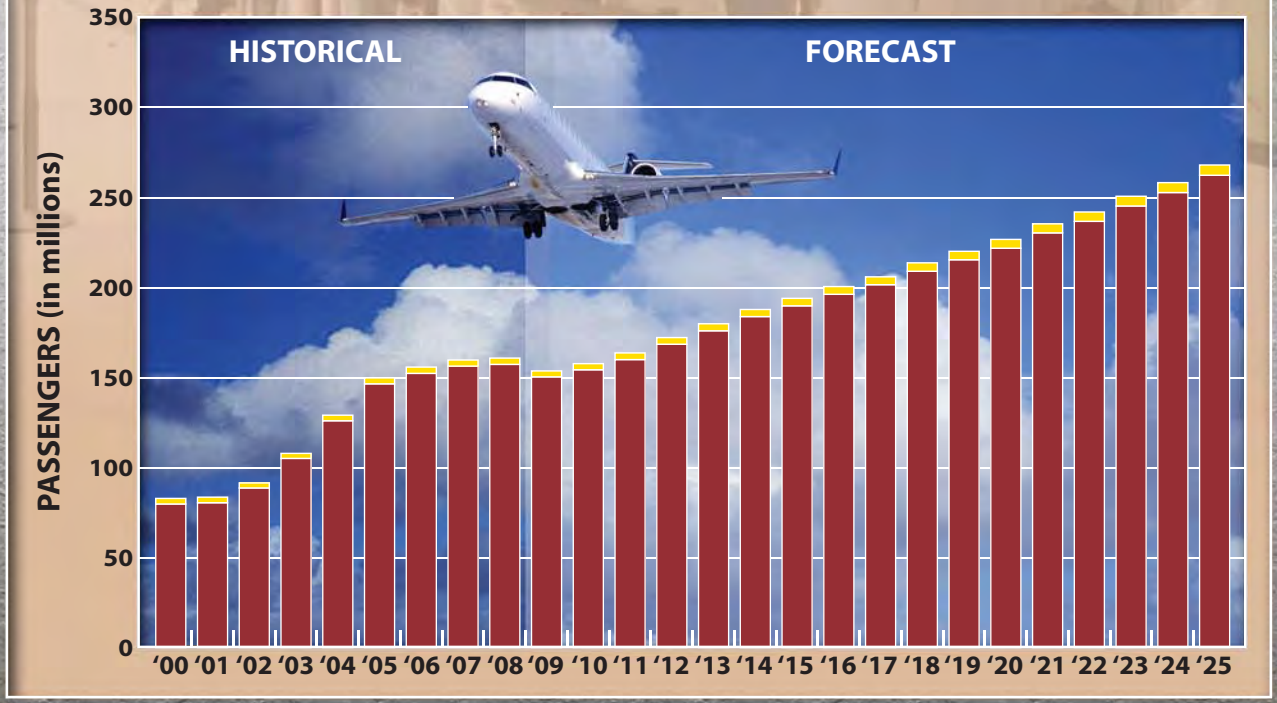


Source: FAA Aerospace Forecasts, FY 2009-2025

Domestic

International

U.S. REGIONAL/COMMUTER SCHEDULED PASSENGER ENPLANEMENTS



Source: FAA Aerospace Forecasts, FY 2009-2025

ABQ INTERNATIONAL SUNPORT

Exhibit B1
U.S. FAA PASSENGER FORECASTS

LOCAL FACTORS AND TRENDS

Airport Service Area

As the only airport in the state with commercial service by major airlines, Albuquerque International Sunport's service area is extensive. Nearly 98 percent of the commercial service passengers enplaning in New Mexico do so at ABQ. The Albuquerque metropolitan statistical area (MSA) comprises approximately 44 percent of the state's population, so it is obvious the airport draws passengers from beyond the MSA.

The closest locations with major airline service are El Paso (224 miles south), Amarillo (278 miles east), and Lubbock (289 miles east). Colorado Springs draws from northern New Mexico, and Phoenix and Tucson draw from western New Mexico. Recently, both Roswell International Air Center and Santa Fe Municipal Airport have attracted regional jet service.

As indicated in the 2003 Master Plan, past studies have indicated that over 67 percent of the ABQ originating passengers come from within a 30-mile radius. The Santa Fe/Los Alamos area is the largest contributor from outside this radius. The combination of Santa Fe and Los Alamos counties, with the five counties comprising the Albuquerque MSA, generates more than 75 percent of the airport's passenger traffic.

Santa Fe Municipal Airport (SAF) has a Class 1, Part 139 certificate for commercial service operations and had over 11,000 enplaned passengers in 2007. In July 2008, however, the airport was left without service as Great Lakes Airlines discontinued its turboprop service to Denver. The airport remained without service until June 2009 when American Eagle began service to Dallas/Ft. Worth International Airport (DFW) with 50-seat regional jets. The airline has announced it will be adding similar service to Los Angeles International Airport (LAX) in November 2009.

While improving the level of air service available at SAF, the introduction of regional jet service is still not expected to approach the commercial jet service available at ABQ. Thus, ABQ can be expected to continue to draw a smaller, but still significant, share of the Santa Fe/Los Alamos market area in the future.

ABQ can expect to continue to draw passengers statewide, as well as from portions of southern Colorado and eastern Arizona, but the primary core of its service area will remain the seven-county area described above.

Socioeconomic Trends

Local and regional forecasts developed for key socioeconomic variables provide an indication of the potential for supporting growth in aviation activity. Three local variables that are typically useful in evaluating the service area and its potential for air traffic growth are population, employment, and per capita personal income (PCPI).

The University of New Mexico Bureau of Business and Economic Research (UNM-BBER) regularly updates forecasts of population for the state and its counties. The most recent forecasts available were prepared in August 2008. They are depicted in **Table B1**, along with historic data back to 1980, for the Albuquerque MSA, the seven-county primary service area, and the state. The population in the state is projected to grow at an annual average rate of 1.6 percent, while the population in the seven-county region is projected to grow at an average rate of 2.0 percent. The MSA is projected to grow even faster at 2.2 percent annually.

TABLE B1
Local and Regional Socioeconomic Variables
Albuquerque International Sunport

	Population			Wage and Salary Employment			Per Capita Personal Income (2004$)	
Year	New Mexico	Seven-County Region	ABQ MSA	New Mexico	Seven-County Region	ABQ MSA	New Mexico	ABQ MSA
ACTUAL								
1980	1,303,303	616,386	523,268	598,199	297,980	246,393	$17,372	$18,591
1981	1,332,747	629,192	534,415	612,792	302,604	249,758	17,453	18,718
1982	1,363,822	637,293	539,380	621,052	309,912	255,131	17,503	19,401
1983	1,394,362	648,419	548,677	633,325	323,975	265,967	17,485	19,818
1984	1,416,719	660,167	558,244	658,034	343,466	282,849	18,133	20,791
1985	1,438,360	672,579	568,975	678,018	361,421	297,296	18,755	21,713
1986	1,462,728	689,257	582,057	683,959	374,813	308,034	18,712	22,036
1987	1,478,519	708,369	597,926	703,064	391,731	322,429	18,708	22,114
1988	1,490,336	720,399	607,795	738,621	411,932	339,482	18,867	22,205
1989	1,503,901	733,015	617,941	754,256	421,521	346,015	19,113	22,150
1990	1,515,933	743,225	625,583	767,139	427,769	350,407	19,492	22,472
1991	1,547,115	756,087	635,989	789,850	438,831	357,478	19,536	22,220
1992	1,580,750	773,021	649,766	802,707	449,391	364,918	19,818	22,563
1993	1,614,937	791,388	663,990	831,296	467,668	379,616	20,348	23,221
1994	1,653,320	811,965	680,801	863,380	490,613	400,229	20,650	23,979
1995	1,682,417	831,719	696,366	904,934	517,040	422,387	21,806	24,954
1996	1,706,151	842,915	705,837	915,284	523,621	428,957	22,106	25,585
1997	1,722,939	852,939	713,179	929,208	532,377	435,958	22,513	26,046
1998	1,733,535	858,577	718,018	945,474	541,934	443,306	23,280	26,764
1999	1,739,844	863,249	720,740	951,156	545,702	446,101	23,562	27,117
2000	1,821,656	905,419	757,296	972,954	560,793	459,086	23,986	27,609
2001	1,852,740	926,855	775,869	977,815	561,220	462,146	25,564	29,212
2002	1,876,287	942,695	789,499	987,693	563,635	462,573	25,378	28,716
2003	1,899,846	958,850	802,604	1,013,107	577,062	471,681	25,499	28,593
2004	1,929,713	977,698	818,748	1,038,845	593,053	485,332	26,679	29,434
2005	1,969,291	1,003,071	839,901	1,051,704	600,242	491,434	27,109	29,631
2006	2,011,406	1,025,548	860,833	1,091,651	626,196	513,803	27,651	30,020
2007	2,053,923	1,050,682	884,382	1,115,677	639,402	524,153	28,251	30,642
FORECAST								
2010	2,162,331	1,140,124	968,485	1,166,500	669,560	549,840	$29,063	$31,142
2015	2,356,236	1,277,649	1,098,341	1,255,880	723,840	594,740	31,003	32,970
2020	2,540,145	1,410,263	1,224,044	1,351,880	782,270	642,950	33,381	35,238
2025	2,707,757	1,535,274	1,343,664	1,455,040	845,130	694,700	38,148	37,884
2030	2,864,796	1,654,822	1,459,540	1,565,930	912,800	750,240	39,303	40,897

Notes: The ABQ MSA consists of Bernalillo, Sandoval, Valencia, and Cibola counties.
The seven-county region consists of the ABQ MSA plus Los Alamos, Santa Fe, and Torrance counties.
The PCPI for the seven-county region is not available.

Sources: Actual data: U.S. Department of Commerce, Bureau of Economic Analysis*
Population forecast: Univ. of New Mexico, Bureau of Business and Economic Research (BBER), Aug. 2008
Employment and PCPI: *The Complete Economic and Demographic Data Source* (CEDDS),
Woods and Poole, Economics, Inc., September 2008

* Population for 2001-2007 are alternative BBER estimates.

Employment and inflation-adjusted PCPI forecasts were obtained from *The Complete Economic and Demographic Data Source (CEDDS)* by Woods and Poole Economics, September 2008. PCPI for the seven-county service area was not available. Employment is projected to grow at a 1.5 percent annual rate in the state and 1.6 percent in the seven-county area and the MSA. Inflation-adjusted PCPI are both projected to grow at a 1.4 percent annual rate in the state, and 1.3 percent in the MSA.

On a national basis, the inflation-adjusted GDP is projected to grow at an annual average of 2.7 percent through 2025. The inflation-adjusted domestic passenger yield (in cents per passenger mile) is projected by the FAA to continue to decline over the same period. This reflects that the yield per passenger-mile for the airlines will grow slower than inflation. The available seat-miles (ASM) on domestic flights are projected by FAA to grow at an annual average rate of 2.6 percent over the next 18 years. The history and forecasts for these national independent variables are depicted in **Table B2**.

TABLE B2
National Independent Variables

Year	Gross Domestic Product (2000$)	Domestic Passenger Yield (2007 cents/mile)	Domestic Available Seat-Miles (billions)
1980	$5,213.4	25.74	349.0
1981	5,305.1	27.70	343.4
1982	5,202.4	25.20	355.9
1983	5,278.8	23.35	374.4
1984	5,656.9	24.64	411.7
1985	5,852.5	22.64	436.7
1986	6,039.9	20.43	488.4
1987	6,550.7	19.49	521.9
1988	6,803.5	20.45	533.3
1989	7,005.3	20.86	529.5
1990	7,115.6	20.13	557.6
1991	7,062.7	19.33	548.4
1992	7,180.2	18.40	554.1
1993	7,571.9	18.96	568.8
1994	7,764.2	18.09	578.1
1995	8,012.6	17.51	602.1
1996	8,269.0	17.74	621.1
1997	8,630.6	17.12	628.6
1998	8,989.9	17.44	660.4
1999	9,370.1	16.86	694.7
2000	9,762.8	16.87	726.6
2001	9,885.1	15.76	732.1
2002	10,002.4	13.91	681.8
2003	10,208.3	13.54	684.2
2004	10,593.4	12.62	730.2
2005	10,925.8	12.06	755.2
2006	11,247.3	12.62	740.2
2007	11,496.0	12.45	752.0
FORECAST			
2010	$11,790.7	12.24	699.3
2015	14,139.6	11.39	859.6
2020	16,077.8	10.75	995.8
2025	18,279.5	10.16	1,153.9

Source: FAA *Aerospace Forecast Fiscal Years 2009-2025*, March 2009.

ABQ AIR SERVICE HISTORY

Historical passenger enplanements from 1962 to 2008 are presented on **Exhibit B2**. The same information, with annual percentage rate changes, is also presented in **Table B3**. As has been documented previously in the Sunport's Master Plan, ABQ experienced a major expansion of passenger activity in the period leading up to airline deregulation in 1979.

Between 1962 and 1979, activity increased every year at an annual average rate of 11.5 percent.

An economic recession, combined with the immediate effects of deregulation, led to a two-year decline in traffic beginning in 1980. However, as the economy expanded both locally and nationally in the 1980s, ABQ traffic grew by an annual average of 9.7 percent between 1981 and 1990.

The Gulf War and another economic recession brought another brief decline in 1991, but traffic rebounded to an all-time high of 3,308,048 in 1996. In 34 years, traffic had grown by over 3.1 million enplanements. This equated to an average increase of 91,500 enplanements per year, or 8.7 percent annual traffic growth.

As it has turned out, 1996 marked a high point in passenger traffic at ABQ that would not be exceeded for 11 years. Traffic declined in 1997 and 1998, as some airlines began to experience financial difficulties and retreated to smaller, tighter systems. In those two years, US Airways and Reno Air discontinued service to ABQ. Traffic began to recover slowly in 1999 and 2000, but those gains were quickly lost with the events of 9/11 coupled with the national recession that same year.

The declines were small in comparison to many other airports, and annual enplanement levels never dipped below 3.0 million. In 2004, the Sunport marked its first traffic increase since 2000. The 4.3 percent increase also exceeded the pre-9/11 traffic level. Traffic grew each of the next three years to set a new all-time high of 3,346,025 enplanements in 2007.

In the first six months of 2008, ABQ enplanements were up 4.3 percent from the first half of 2007. The rising cost of fuel and the ongoing recession, however, had an impact on airline operations over the remainder of the year. Many airlines implemented route cutbacks taking effect in the fall of 2008, as they attempted to retire their least fuel efficient aircraft and concentrate on routes with the highest load factors. With the reduction of flights and available seats, traffic at ABQ ended down 2.6 percent for the year at 3,259,920. Over the first five months of 2009, enplanements were down 15.4 percent.

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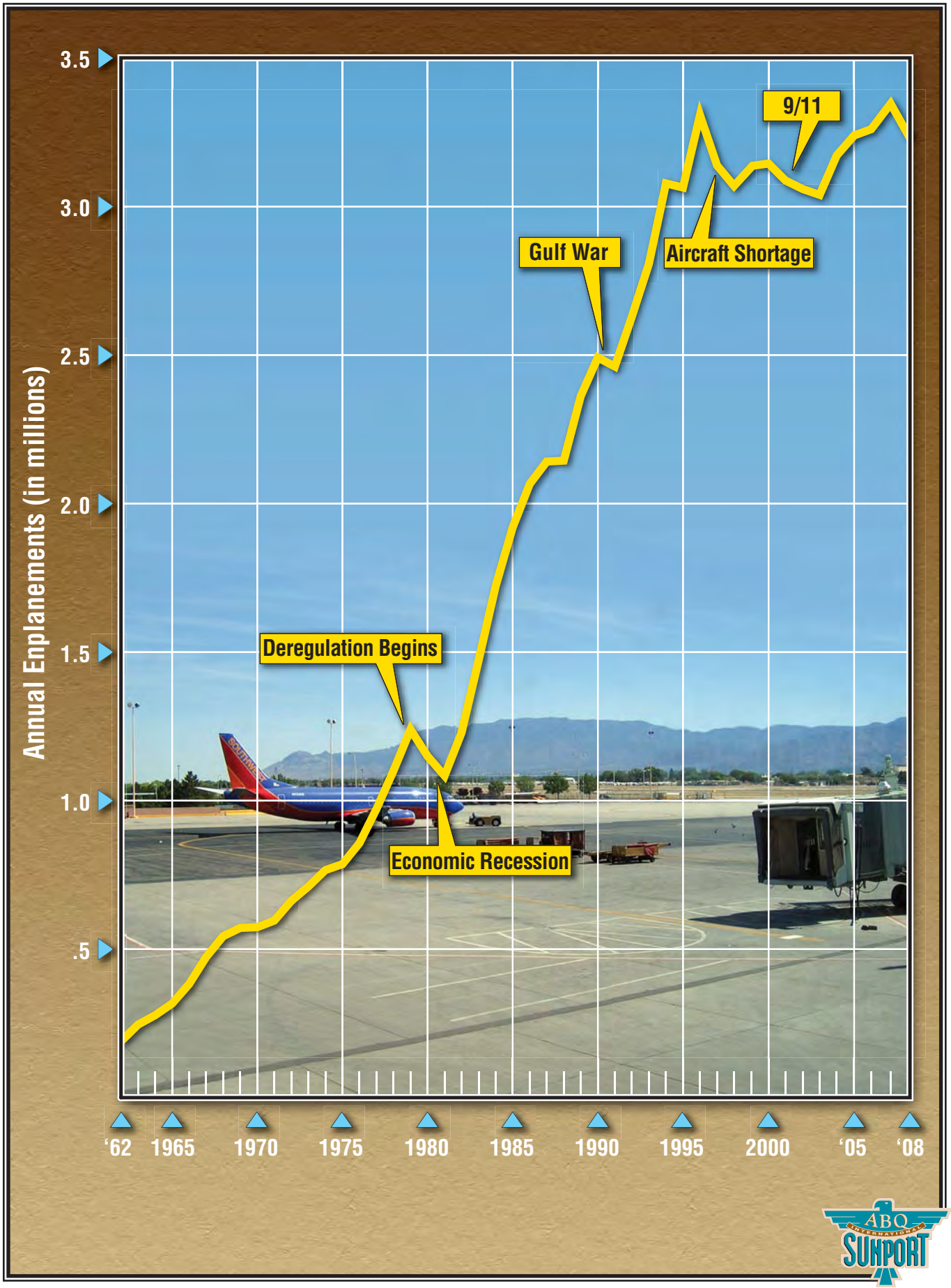

ABQ International SUNPORT

Exhibit B2
ENPLANEMENT HISTORY

TABLE B3
Annual Passenger Enplanements
Albuquerque International Sunport

Year	Enplanements	Annual % Change
1962	196,284	--
1963	245,961	25.3%
1964	277,344	12.8%
1965	316,838	14.2%
1966	382,502	20.7%
1967	473,504	23.8%
1968	543,714	14.8%
1969	571,463	5.1%
1970	574,000	0.4%
1971	596,008	3.8%
1972	662,538	11.2%
1973	710,681	7.3%
1974	766,197	7.8%
1975	786,047	2.6%
1976	856,718	9.0%
1977	971,752	13.4%
1978	1,100,669	13.3%
1979	1,239,504	12.6%
1980	1,149,664	-7.2%
1981	1,083,733	-5.7%
1982	1,229,446	13.4%
1983	1,472,570	19.8%
1984	1,721,869	16.9%
1985	1,920,113	11.5%
1986	2,066,129	7.6%
1987	2,141,538	3.6%
1988	2,144,678	0.1%
1989	2,362,570	10.2%
1990	2,491,702	5.5%
1991	2,461,434	-1.2%
1992	2,629,792	6.8%
1993	2,807,489	6.8%
1994	3,077,974	9.6%
1995	3,064,069	-0.5%
1996	3,308,048	8.0%
1997	3,138,663	-5.1%
1998	3,069,629	-2.2%
1999	3,131,951	2.0%
2000	3,146,208	0.5%
2001	3,087,703	-1.9%
2002	3,063,036	-0.8%
2003	3,039,891	-0.8%
2004	3,171,185	4.3%
2005	3,244,646	2.3%
2006	3,261,463	0.5%
2007	3,346,025	2.6%
2008	3,259,920	-2.6%

Source: City of Albuquerque records.

Table B4 presents enplanements by airline for each of the last three years. Southwest Airlines continues to hold the largest market share at 52.8 percent in 2008, increasing its share from 47.3 percent in 1999, the base year of the Master Plan forecast. American Airlines is second with 11.3 percent, which is down from 12.4 percent in 2005, but is up from 9.2 percent in 1999.

TABLE B4
Passenger Enplanements by Airline
Albuquerque International Sunport

	2006		2007		2008	
AIRLINE	**Enplaned**	**Percent**	**Enplaned**	**Percent**	**Enplaned**	**Percent**
America West/USAirways	209,671	6.4%	199,687	6.0%	171,018	5.2%
American Airlines	398,321	12.2%	384,909	11.5%	369,256	11.3%
Continental Airlines	167,857	5.1%	190,311	5.7%	101,626	3.1%
Delta Airlines	220,685	6.8%	200,777	6.0%	176,966	5.4%
ExpressJet Airlines	0	0.0%	72,335	2.2%	151,638	4.7%
Frontier Airlines	74,007	2.3%	35,851	1.1%	120,335	3.7%
Great Lakes	4,693	0.1%	5,119	0.2%	5,417	0.2%
Horizon Air Industries	18,927	0.6%	47,001	1.4%	0	0.0%
Mesa Airlines	24,407	0.7%	15,358	0.5%	0	0.0%
Northwest Airlines	88,075	2.7%	81,740	2.4%	88,047	2.7%
Pacific Wings/NM Airlines	0	0.0%	1,405	0.0%	4,154	0.1%
Republic Airlines	0	0.0%	27,390	0.8%	10,944	0.3%
Shuttle America	40,032	1.2%	44,517	1.3%	31,376	1.0%
SkyWest Airlines	198,545	6.1%	183,701	5.5%	162,900	5.0%
Southwest Airlines	1,681,206	51.5%	1,690,878	50.5%	1,722,299	52.8%
United Airlines	127,243	3.9%	165,046	4.9%	140,817	4.3%
Other Airlines	7,794	0.2%	0	0.0%	3,127	0.1%
Total Enplanements	**3,261,463**	**100.0%**	**3,346,025**	**100.0%**	**3,259,920**	**100.0%**

Table B5 examines the top 20 passenger destinations from ABQ over the last two decades. The top four destinations have remained the same over the years, with only minor changes in their rank. The top four in 2008 are identical to 1999, while the next six in the top ten have only changed in order. Phoenix is the top destination, with the Los Angeles Basin second, followed by the Dallas/Ft. Worth area and the San Francisco Bay area. There are presently 15 non-stop daily flights to Phoenix, seven to Los Angeles, and 16 to airports in the Dallas/Ft. Worth area.

The destinations of ABQ air travelers have been broadening over the past two decades. In 1990, the top 20 destinations captured 76 percent of the airport's originations. By 1999, that percentage had declined to 69 percent, and in 2008, the top 20 destinations captured 66 percent.

The percentage of originations increased from 83.5 percent in 1990 to 87 percent in 1999. This reflected, at least in part, the increased use of ABQ to gain access to Dallas Love Field under the Wright Amendment restrictions. A traveler from the west could fly to ABQ on one ticket, deplane, and then board the same or another plane to Love Field with another ticket. This reflected a new origination in ABQ rather than a transfer. With the changes to the Wright Amendment in 2006, those passengers could either stay on the plane into Love Field or transfer

on the same ticket to a plane to Love, thereby no longer counting as an origination at ABQ. As a result, originations fell to 80.8 percent in 2008, the second full year after the change was enacted.

TABLE B5
Top 20 Destination Markets
Albuquerque International Sunport

Destination	1990	Destination	1999	Destination	2008
1. Los Angeles	282,280	1. Phoenix	265,325	1. Phoenix	205,710
2. Phoenix	243,380	2. Los Angeles	240,290	2. Los Angeles	197,780
3. Dallas/Ft. Worth	201,780	3. Dallas/Ft. Worth	202,825	3. Dallas/Ft. Worth	167,030
4. San Francisco	121,400	4. San Francisco	147,830	4. San Francisco	136,040
5. Las Vegas	112,180	5. Las Vegas	118,475	5. Denver	125,730
6. San Diego	76,200	6. Houston	92,735	6. Las Vegas	117,770
7. Houston	68,550	7. New York City	87,860	7. New York City	97,020
8. New York City	66,090	8. Chicago	84,295	8. Chicago	87,460
9. Denver	58,170	9. Washington, D.C.	81,835	9. Houston	79,720
10. El Paso	57,780	10. Denver	70,985	10. Washington, D.C.	68,960
11. Washington, D.C.	56,150	11. San Diego	70,475	11. San Diego	64,700
12. Chicago	47,360	12. Seattle	55,185	12. Baltimore	64,340
13. Boston	26,880	13. Atlanta	49,595	13. Seattle	63,000
14. San Antonio	26,660	14. El Paso	49,115	14. Orlando	48,190
15. Seattle	26,630	15. Baltimore	48,185	15. Portland, OR	44,170
16. Kansas City	25,660	16. Minneapolis	41,850	16. Salt Lake City	38,540
17. Austin	23,510	17. Orlando	41,540	17. Tucson	37,390
18. Amarillo	19,920	18. Boston	36,355	18. Minneapolis	36,770
19. Lubbock	18,760	19. Salt Lake City	35,460	19. Philadelphia	36,380
20. Minneapolis	16,690	20. Portland, OR	34,205	20. Kansas City	34,270
Top 20 Total	1,576,030		1,854,420		1,750,610
Total Originations	2,080,510		2,704,445		2,633,470
Total Enplanements	2,491,702		3,106,973		3,259,920
% Originations	83.50%		87.04%		80.8%

Source: Department of Transportation, Bureau of Transportation Statistics, Origin-Destination Survey of Passengers, Directional Market Statistics based upon 10 percent sample of airline tickets.

Table B6 compares the current non-stop destinations from ABQ to those in 1992 and 2000, which correspond to the last two master plan forecasts. In 1992, there were 130 departures to 26 cities. In 2000, there were 149 departures to 35 cities. In early 2009, there were 112 non-stops to 29 cities.

A major difference is in the haul length of flights. In 2000, there were 29 daily flights of less than 200 miles compared to just four today. The number of flights between 200 and 400 miles has also decreased from 53 to 38 daily. Even after the cutbacks in service over the last year, daily flights of over 400 miles are higher at 73 in 2009, compared to 67 in 2000. Similarly, flights over 1,000 miles are still up from 10 in 2000, to 15 today.

Exhibit B3 compares the non-stop flight destinations from ABQ to its top 20 destinations. In 1999, the airport had non-stops to 15 of its top 20 destinations. Today, 18 of the top 20 destinations are served by at least one daily non-stop. The only two currently without non-stop service are Baltimore and New York.

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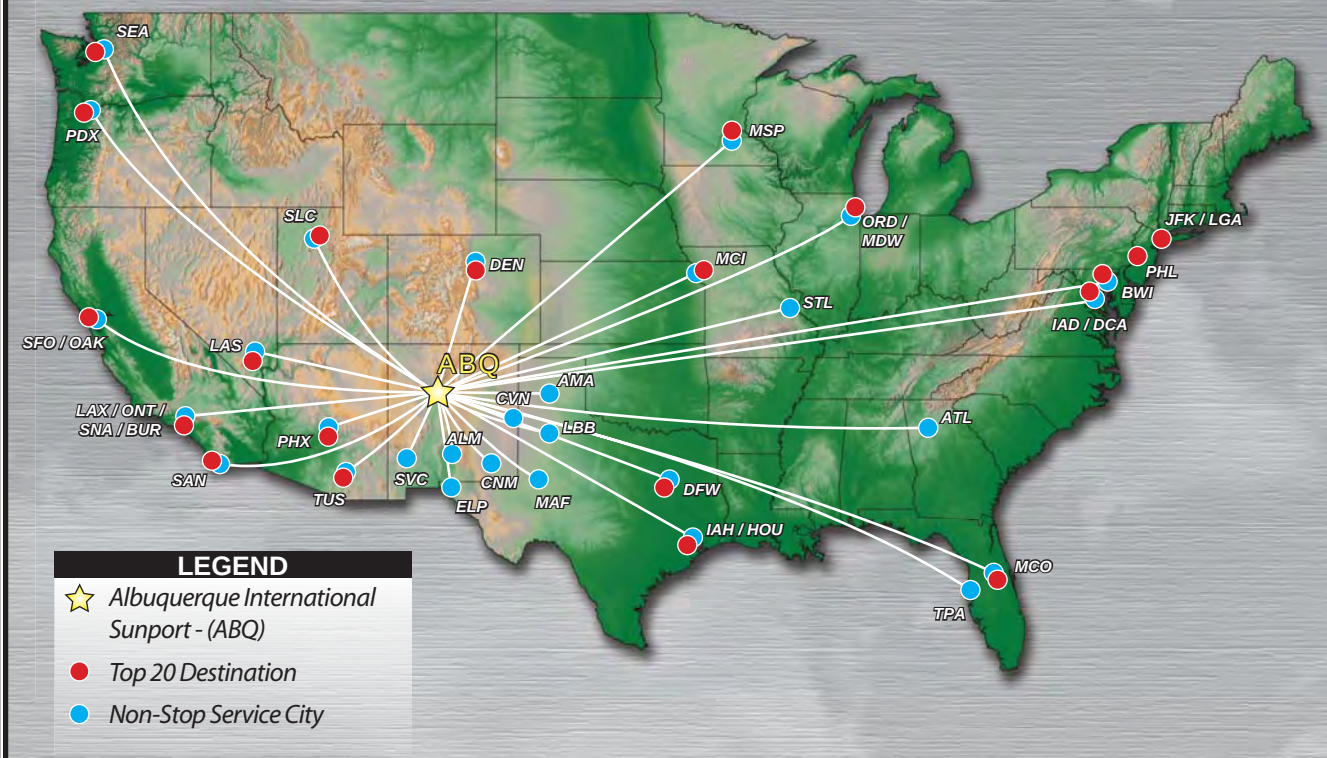

Top 20 Destinations (2009)

1. Phoenix, AZ
2. Los Angeles Basin, CA
3. Dallas/Ft. Worth, TX
4. San Francisco, CA
5. Denver, CO
6. Las Vegas, NV
7. New York, NY
8. Chicago, IL
9. Houston, TX
10. Washington DC
11. San Diego, CA
12. Baltimore, MD
13. Seattle, WA
14. Orlando, FL
15. Portland, OR
16. Salt Lake City, UT
17. Tucson, AZ
18. Minneapolis, MN
19. Philadelphia, PA
20. Kansas City, MO

Non-Stop Service Cities (2009)

- Alamogordo, NM
- Amarillo, TX
- Atlanta, GA
- Baltimore, MD
- Carlsbad, NM
- Chicago, IL
- Clovis, NM
- Dallas, TX
- Denver, CO
- El Paso, TX
- Houston, TX
- Kansas City, MO
- Las Vegas, NV
- Los Angeles Basin, CA
- Lubbock, TX
- Midland/Odessa, TX
- Minneapolis, MN
- Orlando, FL
- Phoenix, AZ
- Portland, OR
- Salt Lake City, UT
- San Diego, CA
- San Francisco/ Oakland, CA
- Seattle, WA
- Silver City, NM
- St. Louis, MO
- Tampa, FL
- Tucson, AZ
- Washinglton, D.C.

Exhibit B3
TOP TWENTY O-D MARKETS /
NON-STOP SERVICE DESTINATIONS

TABLE B6
Non-Stop Service 1992, 2000, 2009
Albuquerque International Sunport

	Daily Flights				Daily Flights		
	1992	2000	2009		1992	2000	2009
Less than 200 miles				***From 600 to 800 miles***			
Alamogordo	1	1	2	Austin	0	0	0
Durango	2	2	0	Houston	5	7	9
Farmington	11	9	0	Kansas City	0	3	1
Gallup	0	3	0	Los Angeles Basin	6	8	7
Las Cruces	2	3	0	Tulsa	0	0	0
Los Alamos	5	1	0	San Antonio	0	0	0
Roswell	7	6	0	San Diego	0	3	2
Santa Fe	3	0	0	Subtotal	11	21	19
Silver City	2	3	2	***From 800 to 1,000 miles***			
Taos	0	1	0	Minneapolis	0	2	2
Subtotal	33	29	4	St. Louis	3	7	1
From 200 to 400 miles				San Francisco/Oakland	3	2	4
Amarillo	2	2	1	Subtotal	6	11	7
Carlsbad	3	4	2	***From 1,000 to 1,200 miles***			
Clovis	2	3	2	Chicago	3	2	5
Colorado Springs	2	3	0	Portland	0	0	1
Denver	10	10	12	Seattle	0	1	1
El Paso	5	7	2	Subtotal	3	3	7
Hobbs	0	0	0	***From 1,200 to 1,400 miles***			
Lubbock	2	2	1	Cincinnati	0	2	0
Midland/Odessa	1	1	1	Atlanta	0	3	3
Phoenix	19	20	15	Subtotal	0	5	3
Tucson	2	1	2	***Over 1,400 miles***			
Subtotal	48	53	38	Baltimore	0	0	1
From 400 to 600 miles				Orlando	0	1	2
Dallas	16	15	16	Pittsburgh	2	0	0
Las Vegas	8	5	6	Tampa	0	1	1
Salt Lake City	3	5	7	Washington, D.C.	0	0	1
Subtotal	27	25	29	Subtotal	2	2	5
				TOTAL NON-STOPS	130	149	112

ENPLANEMENT FORECASTS

As in previous efforts, several analytical techniques were examined for applicability to projecting passenger enplanements. These included time-series extrapolation, regression analyses, and market share analysis.

A market share analysis provides a first look at the potential growth based upon the share of the U.S. passenger enplanement market that ABQ captures. **Table B7** compares ABQ's share of the U.S. domestic enplanement market since 1980. As can be seen in the table, ABQ's share of the market has declined from a peak in the mid-1990s. Over the last four years, however, the market share has been relatively constant around 0.485 percent. A constant market share projection is depicted in the table based upon the FAA forecast of U.S. domestic enplanements. In

line with the FAA domestic enplanement forecast, the constant share projection expects a decline in passenger enplanements in the immediate term followed by a recovery after 2010.

TABLE B7
Market Share Analysis – ABQ Enplanements

Year	ABQ Enplanements	U.S. Domestic Enplanements (millions)	Market Share %
1980	1,149,664	287.9	0.399%
1981	1,083,733	274.7	0.395%
1982	1,229,446	286.0	0.430%
1983	1,472,570	308.1	0.478%
1984	1,721,869	333.8	0.516%
1985	1,920,113	369.9	0.519%
1986	2,066,129	404.7	0.511%
1987	2,141,538	441.2	0.485%
1988	2,144,678	441.2	0.486%
1989	2,362.570	443.6	0.533%
1990	2,491,702	456.6	0.546%
1991	2,461,434	445.9	0.552%
1992	2,629,792	464.7	0.566%
1993	2,807,489	470.4	0.597%
1994	3,077,974	511.3	0.602%
1995	3,064,069	531.1	0.577%
1996	3,308,048	558.1	0.593%
1997	3,138,663	579.1	0.542%
1998	3,069,629	592.1	0.518%
1999	3,131,951	613.3	0.511%
2000	3,146,208	641.2	0.491%
2001	3,087,703	626.8	0.493%
2002	3,063,036	574.5	0.533%
2003	3,039,891	587.8	0.517%
2004	3,171,185	628.5	0.505%
2005	3,244,646	669.4	0.485%
2006	3,261,463	668.4	0.488%
2007	3,346,025	690.1	0.485%
2008	3,259,920	679.6	0.480%
CONSTANT MARKET SHARE PROJECTION			
2010	3,066,720	638.9	0.480%
2015	3,696,000	770.0	0.480%
2020	4,117,400	857.8	0.480%
2030	5,072,640	1,056.8	0.480%

With the enplanements essentially leveling out over the last ten years, a new set of time-series analyses were conducted based upon four different time periods. These include periods beginning with 1962, 1970, 1980, and 1988. As is evident from **Table B8**, the longest period provided the best correlation of 0.955.

TABLE B8
Correlation Analysis
ABQ Enplanements

Time-Series Correlation	r^2
Enplanements, 1962-2008	0.955
Enplanements,1970-2008	0.936
Enplanements, 1980-2008	0.848
Enplanements, 1988-2008	0.702
Single Variable Correlations (1980-2007)	
vs. MSA Population	0.776
vs. Region Population	0.768
vs. New Mexico Population	0.787
vs. MSA Employment	0.911
vs. Region Employment	0.910
vs. New Mexico Employment	0.869
vs. MSA Adjusted PCPI	0.805
vs. New Mexico Adjusted PCPI	0.705
vs. U.S. Adjusted GDP	0.785
vs. U.S. Adjusted Pass. Yield	0.847
vs. U.S. Domestic Enplanements	0.908
vs. U.S. Available Seat Miles (ASM)	0.903
Multiple Variable Correlations	
vs. MSA Employment	
+ Domestic Enplanements	0.9158
+ ASM	0.9146
vs. Region Employment	
+ Domestic Enplanements	0.9161
+ ASM	0.9151

The correlation coefficient (Pearson's "r") measures the association between changes in the dependent variable (enplanements) and the independent variable(s) (calendar years). An r^2 greater than 0.95 indicates good predictive reliability. A value below 0.95 may be used with the understanding that the predictive reliability is lower. The statistical fit of the time-series analysis for the 1962-2007 period was strong, and the resulting projection is presented in **Table B9**.

TABLE B9
Passenger Enplanement Projections
Albuquerque International Sunport

	2010	2015	2020	2030
U.S. Domestic Enplanement Forecast (millions)	638.9	770.0	857.8	1,056.8
Market Share Analysis	3,066,720	3,696,000	4,117,440	5,072,640
Share of U.S Market (%)	0.480%	0.480%	0.480%	0.480%
Time-Series Extrapolation (1980-2008)	3,850,666	4,253,289	4,655,912	5,461,158
Share of U.S. Market (%)	0.603%	0.552%	0.543%	0.517%
Regression vs. MSA Employment	3,898,595	4,262,998	4,654,264	5,525,015
Share of U.S Market (%)	0.610%	0.554%	0.543%	0.523%
Regression vs. Region Employment $				
U.S. Domestic Enplanements	4,137,061	4,566,760	5,028,615	5,534,398
Share of U.S. Market (%)	0.648%	0.593%	0.586%	0.524%
FAA *Terminal Area Forecast* 2008	2,871,141	3,221,154	3,617,016	4,569,219
Share of U.S. Market (5)	0.449%	0.418%	0.422%	0.432%
Selected Forecast Thresholds	**3,000,000**	**3,600,000**	**4,100,000**	**5,100,000**
Share of U.S. Market %	0.470%	0.468%	0.478%	0.483%

The next several regression analyses were run to examine the correlation between enplanements and the independent variables. The local and national independent variables depicted on **Tables B1** and **B2** were considered in addition to U.S. domestic enplanements. Each variable and subsequent combination of variables was tested over the last three decades. A summary of the single variable correlations are included in **Table B8**. The MSA employment offered the best single variable correlation with an r^2 of 0.911. The seven-county region employment was a close second at 0.910. Of the national variables, U.S. domestic enplanements had the highest correlation at 0.908 with U.S. domestic available seat-miles (ASMs) next at 0.903. Since none of the variables provided an r^2 over 0.95, the highest local and national variables were considered for a multiple regression test. The regression combining regional employment with U.S. domestic enplanements resulted in a correlation of 0.916. The resulting projections from the highest single and multiple variables are presented for comparison in **Table B9**. As is evident from the table, the two regression projections and the time-series extrapolation are very similar. Shorter test periods were considered, but the resulting correlations were significantly lower.

The FAA's 2008 *Terminal Area Forecast* (TAF) for ABQ is also presented for comparison on the table, as well as on **Exhibit B4**. In the short term, the TAF projections are lower than both the market share and statistical projections, with the market share projections falling close to mid-range.

Table B9 also compares the market share of each projection to the FAA forecast of U.S. domestic enplanements. The market share of the statistical forecasts are particularly high over the short term, indicating that this level of growth would require a significant capture of additional market share, which is not likely. The FAA TAF projects a decline in market share over the next ten years, then regaining a small amount over the long term.

Given the uncertainty of the recession combined with fuel prices and their affect on the airlines, it is difficult to be optimistic regarding traffic growth in the short term. As indicated earlier, traffic in the first six months has averaged more than 15 percent below the same period last year. Flight schedules and available seats have significantly declined since the summer of 2008. As a result, enplanements for 2009 are likely to fall below 3.0 million for the first time in 16 years. As industry restructuring continues and the nation begins to recover from the recession, little or no growth may be expected in 2010 as well. Thus, enplanements for 2010 are expected to remain around the 3.0 million level.

A forecast was selected that dips slightly in market share, but generally remains around the current level of 0.480 percent over the planning period. It most closely resembles the constant mid-range market share projection. The selected forecast presented is at the bottom of **Table B9**.

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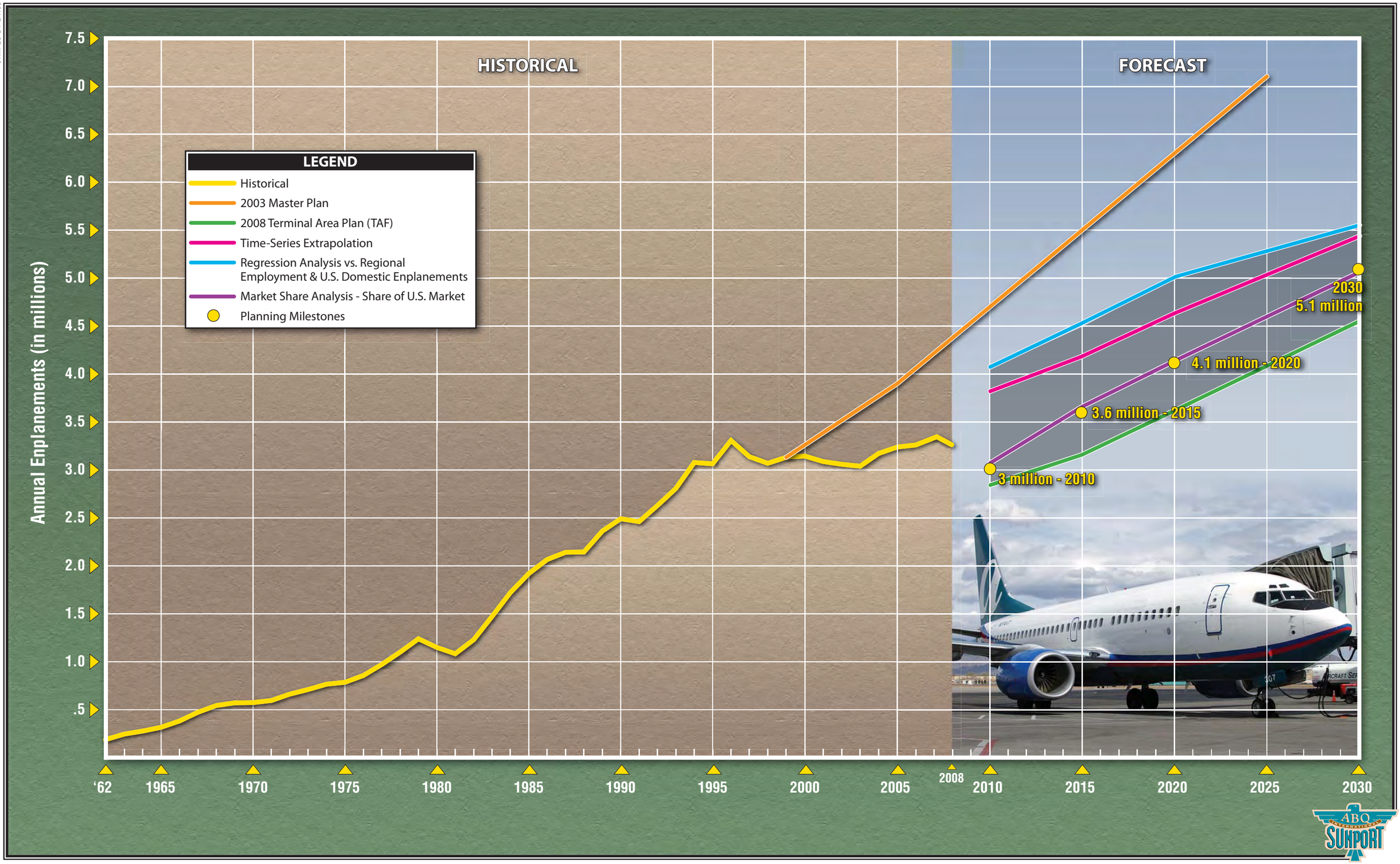

Exhibit B4
ENPLANEMENT PROJECTIONS

AIRLINE OPERATIONS

The commercial service fleet mix is needed to project airline operations for the airport. A projection of the fleet mix for Albuquerque International Sunport has been developed by reviewing the equipment used by the carriers serving the airport.

The airlines are undergoing a dramatic adjustment in their fleet mix composition. As older aircraft are retired, routes will be transferred to regional airlines and adjustments will be made to domestic routes. High fuel prices are creating a reduction in domestic capacity as airlines attempt to generate a profit. A slowing U.S. economy is also impacting their ability to quickly return to profitable operations. To gauge the type of transition which is occurring within the airline fleet over the next few years, information has been examined for each of the airlines serving Albuquerque.

Many of the aircraft that airlines have been using to service ABQ are no longer in production. These include the B717, B737 series 300/400/500, B757, and MD-80. Consequently, the airport can expect to see more of the new generation B737 series 700/800/900 and the A319/A320 in the narrow-body categories of 105 seats and up.

With rising fuel costs, the original 50-seat regional jets are being found to be less cost-effective than the new stretched versions of 66 seats and up. Smaller turboprop aircraft can be expected to continue to serve smaller markets primarily through programs such as Essential Air Service.

The long term outlook for the fleet mix at Albuquerque International Sunport is dependent on traffic growth and additional technological advancements. Current trends and fleet orders have provided input into the projection of annual departures and operations by the scheduled carriers.

Table B10 presents a percentage breakdown of the major airline fleet mix by seating capacity for ABQ for 1999, 2006, 2007, and 2008. Aircraft within the 125-144 seat range have remained dominant at ABQ. Until last year, the average seats per departure remained relatively constant around 107 over the past decade, while enplanement levels have not significantly changed. The ratio increased to 111 in 2008, primarily due to the discontinuance of many commuter flights to New Mexico destinations. In the short term, the ratio may level out, but can be expected to increase slightly as passenger traffic begins to increase again and higher seating capacity narrow-body aircraft and regional jets transition into the fleet.

The boarding load factor (BLF) is defined as the ratio of passengers boarding aircraft compared to the seating capacity of the aircraft. The BLF at ABQ increased from 59 percent in 1999 to over 72 percent in 2006. This increase followed along with the rise in the domestic airline load factors over the same period.

While load factors continued to increase nationwide in 2007, the boarding load factor at ABQ actually declined. The change in the Wright Amendment allowing for one-stop flights from areas outside the Wright Zone into and out of Love Field in Dallas likely contributed to this decline in the BLF. This increased through-passengers on flights to Love Field that stopped in Al-

buquerque. Through-passengers that stay on the same plane do not count as enplanements at that airport.

TABLE B10
Historic Airline Fleet Mix and Operations
Albuquerque International Sunport

Fleet Mix Seating Capacity	Actual			
	1999	2006	2007	2008
>220	0.0%	0.0%	0.0%	0.0%
165-219	2.3%	0.7%	0.8%	1.2%
145-164	7.7%	3.6%	3.6%	3.1%
125-144	52.7%	61.8%	59.5%	63.6%
105-124	14.6%	6.3%	7.4%	8.6%
91-104	0.0%	0.0%	0.0%	0.0%
75-90	0.0%	0.1%	0.2%	0.3%
60-74	0.0%	6.2%	4.9%	3.0%
40-59	0.8%	11.4%	16.4%	16.5%
20-39	0.0%	0.0%	0.0%	0.0%
<19	21.9%	9.9%	7.2%	3.7%
Total	100.0%	100.0%	100.0%	100.0%
Average Seats per Departures	106.3	107.2	106.8	111.3
Boarding Load Factor	59.0%	72.3%	69.1%	67.9%
Enplanements per Departure	62.8	77.5	73.8	75.5
Annual Enplanements	3,133,726	3,261,463	3,346,025	3,259,920
Annual Departures	49,931	42,098	45,342	43,167
Annual Operations	99,862	84,196	90,684	86,334

The national load factor declined slightly in 2008 as airlines scrambled to cut capacity to match decreased demand. At ABQ, the load factor continued to decline for this reason as well as the continued response to the Wright Amendment changes. The BLF is expected to rebound and increase in the future, in line with the FAA forecasts for a slow increase in load factors through 2018. In the long range, however, the load factors are anticipated to begin a slow decline. **Table B11** presents the resulting fleet mix and operations forecast for ABQ.

Table B11 also serves as a summary of both forecast airline enplanements and operations at Albuquerque International Sunport. Enplanements are projected to grow slowly over the next few years. Over the long term, a 2.1 percent annual growth ratio is forecast. Similarly, annual operations could actually decline more in the immediate term, then recover and grow at a 1.4 percent annual rate.

AIR CARGO

Air freight includes the combined activities of the scheduled passenger airlines carrying freight on scheduled flights and the dedicated all-cargo carriers. Air mail is carried by both the scheduled passenger airlines and all-cargo carriers; however, this tonnage is not reported separately from other types of air freight. This section describes the national aviation trends in the air freight/all-cargo airline industry, historical activity at ABQ, and future projections of air freight/all-cargo activity.

TABLE B11
Airline Fleet Mix and Operations Forecast
Albuquerque International Sunport

Fleet Mix Seating Capacity	Forecast			
	2010	2015	2020	2030
>220	0.0%	0.0%	0.0%	1.0%
165-219	1.0%	1.0%	2.0%	2.0%
145-164	3.0%	4.0%	5.0%	7.0%
125-144	62.0%	60.0%	56.0%	52.0%
105-124	9.0%	9.0%	10.0%	12.0%
91-104	0.0%	0.0%	2.0%	3.0%
75-90	3.0%	5.0%	7.0%	10.0%
60-74	5.0%	6.0%	8.0%	8.0%
40-59	13.0%	10.0%	6.0%	2.0%
20-39	0.0%	2.0%	2.0%	3.0%
<19	4.0%	3.0%	2.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%
Average Seats per Departure	111.6	111.9	114.1	118.5
Boarding Load Factor	70.0%	72.0%	73.0%	73.0%
Enplanements per Departure	78.1	80.6	83.3	86.5
Annual Enplanements	3,000,000	3,600,000	4,100,000	5,100,000
Annual Departures	38,420	44,700	49,250	58,950
Annual Operations	76,840	89,400	98,500	117,900

NATIONAL AIR CARGO TRENDS

Air cargo activity has historically had a high correlation to Gross Domestic Product (GDP). Other factors that affect air cargo growth are real yields, improved productivity, and globalization. Ongoing trends that are and will continue to improve the air cargo market include the opportunities from open skies agreements, decreasing costs from global airline alliances, and increasing business volumes from e-commerce. At the same time, trends that could limit air cargo growth include increased use of mail substitutes (e-mail) and increased airline costs due to environmental and security restrictions.

Before 2001, air cargo was the fastest growing sector of the aviation industry. From 1994 through 2000, total tons and revenue ton-miles (RTMs) grew at annual average rates of 8.0 and 8.6 percent. An economic slowdown in the U.S., combined with the collapse of the high-tech industry and a slowing of imports, resulted in declines of 5.0 percent in tons and 3.9 percent in RTMs in 2002. Domestic air cargo RTMS grew in 2003 and 2004, peaking at 16.3 million RTMs in 2004. By 2008, domestic RTMs had declined to 14.3 million RTMs.

The FAA notes there are several structural changes that are occurring within the air cargo industry. Among them are the following:

- **Security regulations** – On August 3, 2007, *Recommendations of the 9/11 Commission Act of 2007* was signed into law. Section 1602 of this Act states that air cargo placed on passenger aircraft will receive the same level of screening as passenger-checked baggage. This legislation calls for the establishment of a system by 2010 that will require 100 percent inspection of cargo transported by passenger aircraft. The Transportation Security Administration

(TSA) intends to physically screen 50 percent of passenger aircraft cargo in 2009. It is anticipated that this new law will lead to increased cost and time requirements for shipment on passenger air carriers.

- **Market maturation** – The express market in the United States has matured after dramatic growth over the last two decades. This is the majority of domestic air cargo activity.

- **Modal shift** – Improved service and economics from the use of alternative modes of cargo transported by the integrated cargo carriers (e.g., FedEx and UPS) has matured.

- **Increases in air fuel surcharges**.

- **Increased USPS use of all-cargo carriers** – This initially resulted from the U.S. Postal Service's (USPS) need to improve control over delivery. The trend has continued due to security regulations.

- **Increased use of mail substitutes** – Substitutes such as e-mail affect mail volume. The residual fear of mail because of terrorism has also been a factor.

The FAA forecasts of RTMs is based on some specific assumptions exclusive to the air cargo industry. First, security restrictions will remain in place. Second, most of the shift from air to ground transportation has occurred.

Total RTMs are projected to decrease by 7.6 percent in 2009 and then grow by 4.2 percent in 2010. Over the next two years, total RTMs flown are forecast to decrease 1.9 percent annually. Over the following ten years, total RTMs are projected to recover and increase at an annual average rate of 5.2 percent and then 4.2 percent annually between 2020 and 2025. Most of this growth will be driven by international air cargo carried by the expected growth in the world GDP. **Exhibit B5** depicts the FAA forecasts for air cargo.

Domestic cargo RTMs decreased 1.1 percent annually between 2000 and 2008. Domestic RTMs are projected to decrease by 8.3 percent in 2009 and grow by a modest 2.5 percent in 2010. From 2010 through 2020, growth is expected to average 2.5 percent annually, based upon projected U.S. economic growth. Domestic RTMs are projected to slow to a 1.8 percent annual growth rate between 2020 and 2025.

Between 1997 and 2008, the all-cargo carrier percentage of U.S. domestic RTMs grew from 65.4 percent to 85.0 percent. By 2025, this share is projected to increase to 88.4 percent based upon increases in wide-body capacity for all-cargo carriers and security considerations.

International RTMs flown by U.S. carriers are projected to fall by 7.5 percent in 2009, reflecting the impact of the global economic downturn. International RTMs are projected to grow by 5.0 percent in 2010 as the global economy is expected to improve. International RTMs are projected to increase 6.2 percent annually between 2010 and 2025. The all-cargo carriers' percentage of the international market decreased from 66.8 percent in 2007 to 63.3 percent in 2008

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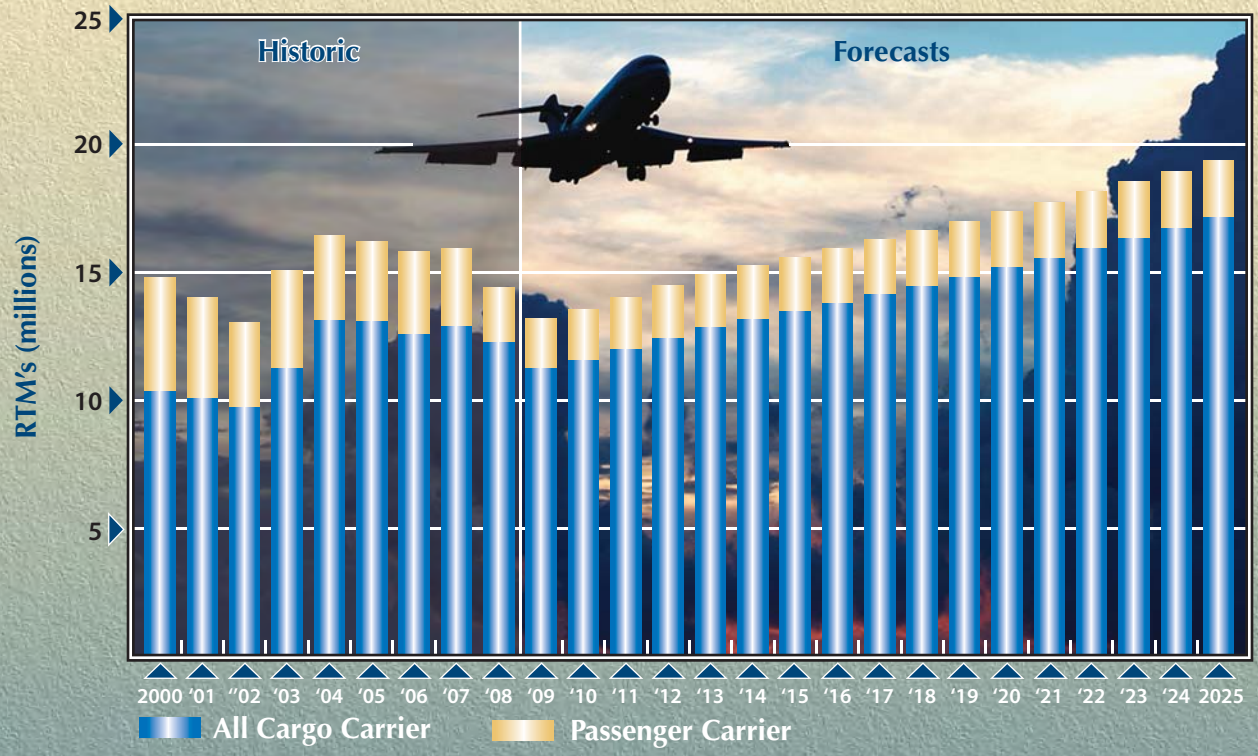
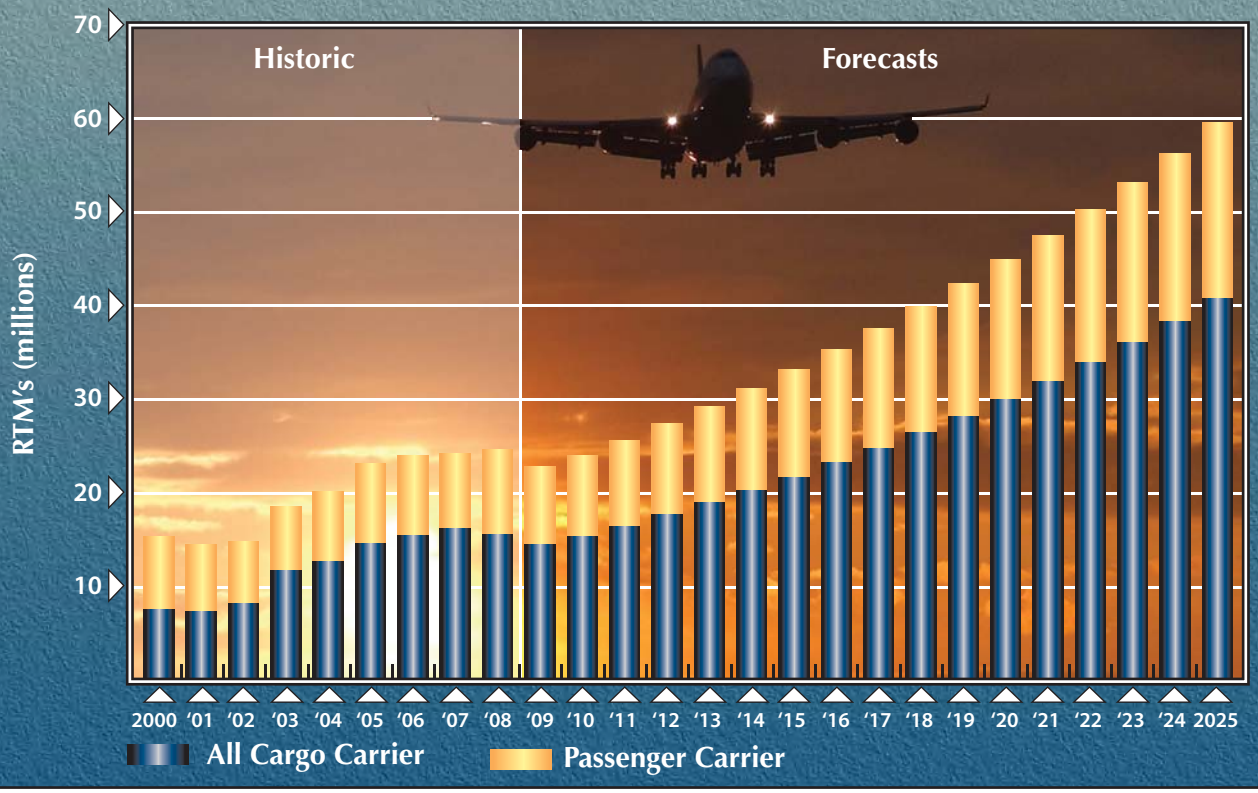
DOMESTIC AIR CARGO REVENUE TON MILES (RTM's)
U.S. COMMERCIAL CARRIER



INTERNATIONAL AIR CARGO REVENUE TON MILES (RTM's)
U.S. COMMERCIAL CARRIER



Source: FAA Aerospace Forecasts, Fiscal Years 2009-2025

Domestic figures prior to 2003 exclude Airborne Express Inc.

due to the bankruptcy of three all-cargo carriers. However, the all-cargo share of RTMs is projected to increase to 68.4 percent by 2025.

The all-cargo large jet aircraft fleet is expected to grow by only six aircraft by 2010 (from 949 in 2010). Narrow-body aircraft are projected to increase by 11 aircraft per year through 2025 as older 757s and 737s are converted to cargo service. The wide-body fleet is projected to increase by 29 aircraft yearly.

ABQ AIR CARGO

While the total tons of air freight at the Albuquerque International Sunport were 29 percent higher in 2008 than in 1993, the total tons of air freight decreased in 2007 and 2008. In the past 16 years, the highest level of air freight at the Sunport was in 2000 when 86,200 tons of air freight was processed at the airport. The second highest level was 84,000 tons in 2006. The decline in air freight in 2008 follows the national trend of lower air freight levels due to the ongoing domestic economic recession.

Table B12 compares ABQ total freight as a percentage of domestic freight/express RTMs since 1993. Over this 16-year period, air freight at ABQ has ranged from a high of 0.67 percent in 1996 to a low of 0.48 percent in three separate years (2004, 2007, and 2008). Since 1993, air freight handled at ABQ has averaged 0.55 percent of domestic RTMs.

Extrapolating the 2007 and 2008 ABQ market share of 0.48 percent through 2030 yields 101,000 tons of total air freight at ABQ by 2030. This forecast also yields a decline in ABQ air freight in 2010, consistent with FAA projections for national air freight. The FAA expects air freight to decline in 2009 with recovery in late 2010, consistent with recovery from the national recession. A second projection assumes that air freight at ABQ would grow faster than the national average and grow to 0.67 percent of domestic RTMs by 2030.

Statistical correlations with local and national socioeconomic variables were examined for applicability to air freight projections. These correlation analyses focused on the entire 16-year period. Due to the uneven growth patterns and variations in annual air freight volumes, the correlation analyses yielded low coefficients that were determined to be not reliable enough for future projections. Therefore, the projection of future air freight relied on the market share analysis described above.

The planning forecast for total air freight at ABQ is summarized in **Table B12** and **Exhibit B6**. This projection assumes that the ABQ share of domestic RTMs will grow slightly to 0.49 percent in 2010, and then maintain the historical 16-year average of 0.55 percent of domestic RTMs through the remainder of the planning period. This forecast moderates the increasing market share projection described above. The increasing market share projection most likely overstates the potential for air freight growth. As described above, the air freight market has matured in the United States. Therefore, growth will be closely tied to economic activity, and the ability to significantly grow outside economic levels will be limited.

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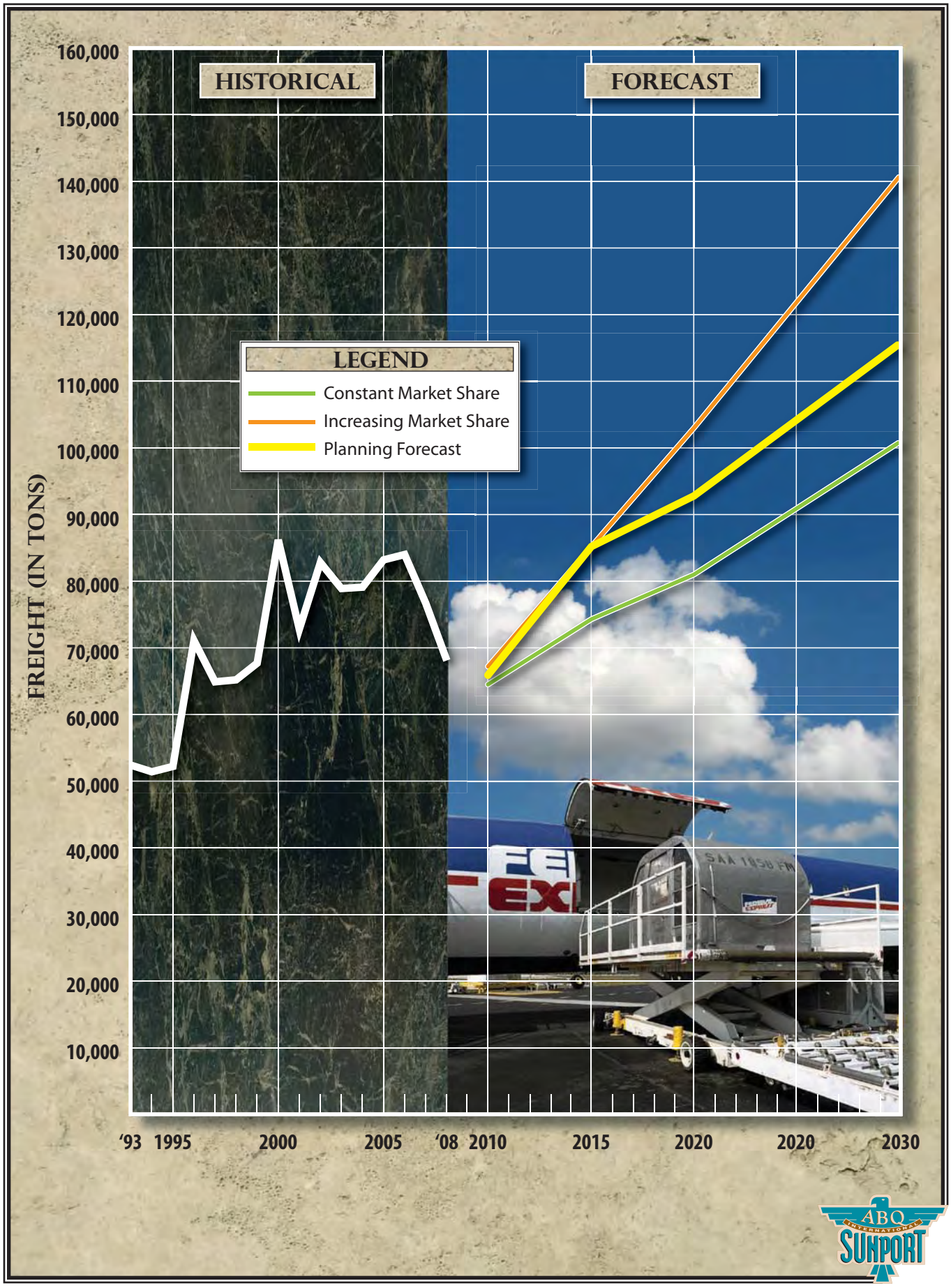

Exhibit B6
AIR CARGO FORECASTS

TABLE B12
Air Freight Market Share Analysis

Year	ABQ Freight (tons)	U.S. Domestic Freight RTMs (millions)	ABQ Percent Share
HISTORICAL			
1993	52,400	8,557,400	0.61%
1994	51,400	9,334,500	0.55%
1995	52,200	10,342,100	0.50%
1996	71,100	10,655,300	0.67%
1997	64,900	11,177,900	0.58%
1998	65,200	11,527,300	0.57%
1999	67,700	11,453,300	0.59%
2000	86,200	14,698,700	0.59%
2001	72,800	13,937,900	0.52%
2002	82,800	12,967,400	0.64%
2003	78,900	14,972,400	0.53%
2004	79,100	16,340,900	0.48%
2005	83,200	16,089,600	0.52%
2006	84,000	15,710,500	0.53%
2007	76,700	15,818,000	0.48%
2008	68,100	14,308,400	0.48%
FORECAST			
CONSTANT MARKET SHARE			
2010	64,500	13,442,900	0.48%
2015	74,300	15,485,200	0.48%
2020	81,000	16,877,500	0.48%
2030	101,000	21,049,500	0.48%
INCREASING MARKET SHARE			
2010	67,200	13,442,900	0.50%
2015	85,200	15,485,200	0.55%
2020	103,000	16,877,500	0.61%
2030	141,000	21,049,500	0.67%
PLANNING FORECAST			
2010	65,900	13,442,900	0.49%
2015	85,200	15,485,200	0.55%
2020	92,800	16,877,500	0.55%
2030	115,800	21,049,500	0.55%

Source for historical data:
1993 to 1999: *2002 Albuquerque International Sunport Master Plan*
2000 to 2001: Airports Council International
2002 to 2008: City of Albuquerque
Source for US Domestic Freight RTMs:
FAA *Aerospace Forecasts*, Selected Years
RTM - Revenue Ton Mile

Table B13 provides projections of all-cargo air freight and the air freight carried on scheduled passenger airline flights. The all-cargo airlines carried approximately 95 percent of the total air freight at ABQ in 2008. This is up from 90 percent experienced in 1999 at ABQ. The all-cargo airlines are projected to maintain this overall high share of air freight handled through the planning period as security regulations for screening air freight on passenger airlines is implemented. Historically, deplaned freight tons have been higher than enplaned freight tons at ABQ. In 2008, the all-cargo airlines deplaned air freight tons represented approximately 64 percent of total all-cargo airline tons. For the passenger airlines, deplaned freight tons represented approximately 73 percent of passenger airline freight tons. These trends are projected to continue through the planning period.

TABLE B13
Air Cargo Forecast Summary (Tons)

	Actual		Forecast			
	1999	**2008**	**2010**	**2015**	**2020**	**2030**
All-Cargo						
Enplaned	26,294	23,000	22,300	28,800	31,400	39,200
Deplaned	34,323	41,133	39,600	51,300	55,800	69,700
Total All-Cargo	**60,617**	**64,133**	**61,900**	**80,100**	**87,200**	**108,900**
Belly Freight						
Enplaned	1,970	1,096	1,100	1,400	1,500	1,900
Deplaned	5,097	2,893	2,900	3,700	4,100	5,000
Total Belly Freight	**7,067**	**3,989**	**4,000**	**5,100**	**5,600**	**6,900**
Total						
Enplaned	28,264	24,096	23,400	30,200	32,900	41,100
Deplaned	39,420	44,026	42,500	55,000	59,900	74,700
Total Air Freight	**67,684**	**68,122**	**65,900**	**85,200**	**92,800**	**115,800**

ALL-CARGO OPERATIONS

In 2008, ABQ was served by three national all-cargo carriers (FedEx, DHL, and United Parcel Service) and three airlines providing feeder service to rural communities in New Mexico from ABQ. DHL discontinued service in early 2009. These six airlines used a combination of turboprop and jet transport aircraft.

As shown in **Table B14**, the combined activity of the feeder and dedicated national all-cargo jet aircraft carriers totaled 10,818 operations in 2008. The all-cargo commercial jets had a load factor of 36 percent in 2008. Therefore, there was a large amount of excess capacity on the jets used in daily service. This is most likely due to the aircraft operating at ABQ also serving other airports enroute to regional or national hubs. As cargo volumes grow, part of the growth will be expected to be accommodated on the existing flights. Additionally, it is expected that larger aircraft will increase in use at the airport as cargo volumes grow. This is also reflective of the national trends which show the replacement of existing narrow-body cargo aircraft such as the 727 with the larger narrow-body 757 converted freighters. However, it is expected that the

larger wide-body aircraft may decline in use (aircraft over 100,000 pounds of cargo capacity) to better match increasing load factors through the planning period.

Table B14 presents the operational forecasts for the all-cargo carriers taking into account the aircraft size and load factors. Load factors are projected to increase through the planning period as cargo volumes increase and lift capacity is more closely aligned with volumes. This projection assumes a decline in the number of operations by aircraft with cargo volumes over 100,000 pounds being replaced with that of aircraft between 45,000 pounds and 100,000 pounds. Since the all-cargo carriers deplane more freight, the operational projections were made using deplaned freight projections. Conversely, the feeder airlines enplane more freight than they deplane. The feeder airline operations were projected from enplaned air freight.

TABLE B14
Air Cargo Operations Forecast

Fleet Mix / Payload Capacity (lbs)	2008	Forecast 2010	2015	2020	2030
All Cargo Commercial Jet					
>130,000	0%	0%	0%	0%	0%
100,000-130,000	60%	82%	80%	70%	60%
70,000-100,000	7%	7%	10%	15%	15%
45,000-70,000	10%	5%	5%	10%	15%
35,000-45,000	0%	0%	5%	5%	10%
20,000-35,000	23%	6%	0%	0%	0%
<20,000	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%
Average Capacity (lbs.)	87,637	104,800	105,250	100,750	94,000
Load Factor	36%	29%	36%	39%	45%
Pounds per Departure	31,364	30,392	37,890	39,293	42,300
Total Deplaned Tons	41,133	39,600	51,300	55,800	69,700
Annual Departures	2,579	2,600	2,700	2,800	3,300
Annual Operations	**5,158**	**5,200**	**5,400**	**5,600**	**6,600**
All-Cargo Feeder					
Total Enplaned Tons	1,500	1,600	2,000	2,200	2,700
Pounds per Departure	1,060	1,100	1,350	1,400	1,600
Annual Departures	2,830	2,900	3,000	3,100	3,400
Annual Operations	**5,660**	**5,800**	**6,000**	**6,200**	**6,800**
Total Operations	**10,818**	**11,000**	**11,400**	**11,800**	**13,400**

Source: Coffman Associates analysis

Aircraft Examples	
>130,000	Boeing 747, MD-11, A380, DC-10
100,000-130,000	DC-8, A300-600, Boeing 767
70,000-100,000	Boeing 767
45,000-70,000	Boeing 757
35,000-45,000	Boeing 727
20,000-35,000	DC-9, A310
<20,000	Cessna Caravan, Cessna 402

GENERAL AVIATION

The following forecast analysis examines each of the general aviation demand categories expected at ABQ through 2030. Each segment will be examined individually, and then collectively, to provide an understanding of the overall aviation activity at the airport.

The remainder of this section presents the forecasts for general aviation demand, which includes the following:

- Based Aircraft
- Based Aircraft Fleet Mix
- Local and Itinerant Operations

The local airport service area is defined by the proximity of other airports and the facilities they are able to provide to owners/operators of general aviation aircraft. General aviation service areas are limited by nearby airports, which provide similar aircraft tie-down, fuel, and hangar services.

Bernalillo County is served by two public use airports providing general aviation services: Albuquerque International Sunport and Double Eagle II Airport. Albuquerque International Sunport provides general aviation services in addition to being the primary commercial airline and air cargo airport in the state. The Sunport also accommodates military activity from Kirtland Air Force Base. Double Eagle II Airport is the designated reliever airport for the Sunport, primarily accommodating general aviation activity. Double Eagle II Airport also accommodates some military training activities.

It should be noted, however, that ABQ serves a large number of transient general aviation aircraft. In particular, larger business aircraft which need the longer runway lengths at ABQ to meet departure length requirements in the warm summer months. A runway extension is planned at Double Eagle II Airport. Once extended, Double Eagle II Airport may also attract some existing transient users from ABQ. This may be tempered by the fact that ABQ is conveniently located to eastern metropolitan areas and provides adequate runway length, navigational aids, and general aviation services. Therefore, some transient users coming to the metropolitan area will choose ABQ over Double Eagle II Airport, especially if they are accessing the eastern portions of the metropolitan area. However, since the Sunport is centrally located and provides a longer runway length than Double Eagle II Airport, the Sunport presently serves a larger portion of the transient general aviation users to the local community than Double Eagle II Airport. This is especially true for business and corporate users whose business jet aircraft cannot operate at Double Eagle II Airport.

The City and Aviation Department's policy is to encourage the use of Double Eagle II Airport by general aviation aircraft. This policy, along with differences in costs and a more compatible operating environment for smaller general aviation aircraft at Double Eagle II Airport, has most likely contributed to the decline in the number of based aircraft at ABQ in the past 10 years. In

2008, there were approximately 145 aircraft based at ABQ. This number is down from 227 in 1999.

NATIONAL TRENDS

Deliveries of general aviation aircraft by U.S. manufacturers were down 3.1 percent in 2008 to 3,079 aircraft. Turbine aircraft deliveries were up, with jets growing 17.2 percent and turboprops 14.8 percent. In contrast, piston deliveries were down 17.6 percent. This was driven by a 18.9 percent decline in single-engine piston aircraft which dominate the market, while multi-engine aircraft deliveries were up 18.2 percent.

While shipments were down, the active general aviation fleet increased by an estimated 1.0 percent. Despite the increased fleet, general aviation activity at FAA towered airports declined 5.6 percent in 2008. Flight hours for general aviation aircraft decreased by 0.02 percent in 2008. The number of student pilots fell by 4.0 percent, the fourth consecutive year that student numbers have declined, despite industry-wide programs to attract new pilots.

The FAA projects that the business use of aircraft will continue to grow faster than the personal and sport use. The active general aviation fleet is projected to increase at an annual average rate of 1.0 percent through 2025. Turbine-powered aircraft will continue to lead the way, growing at 3.2 percent per year.

The turbine jet fleet is projected to increase at 4.8 percent annually. In recent years, the very light jets (VLJs) were expected to add as many as 500 jets annually to the fleet. The bankruptcy of Eclipse and the closing of DayJet have reduced the expectations for rapid growth in the VLJ market. VLJ deliveries in 2008 totaled 262. Deliveries are expected to total 200 over the next two years, then increase from 270 to 300 annually after that.

Piston-powered aircraft are expected to decrease through 2013, then slowly increase for the remainder of the planning period for a net increase of just 0.1 percent annually. It is also expected that VLJs and the new light sport category will erode the high and low ends of the piston markets over the forecast period.

Active aircraft in the light sport category are expected to grow by 11.5 percent annually through 2013, then slow to 2.6 percent annual growth through 2025. **Exhibit B7** depicts the FAA forecast for active general aviation aircraft.

General aviation hours flown are forecast to increase by 1.8 percent annually. As with active aircraft, turbine aircraft are forecast for the highest increases, at 3.6 percent per year. Piston-powered aircraft are forecast for a 0.4 percent annual increase. The increasing size of the turbine fleet combined with the expanded fractional ownership fleet merge for the larger growth rate.

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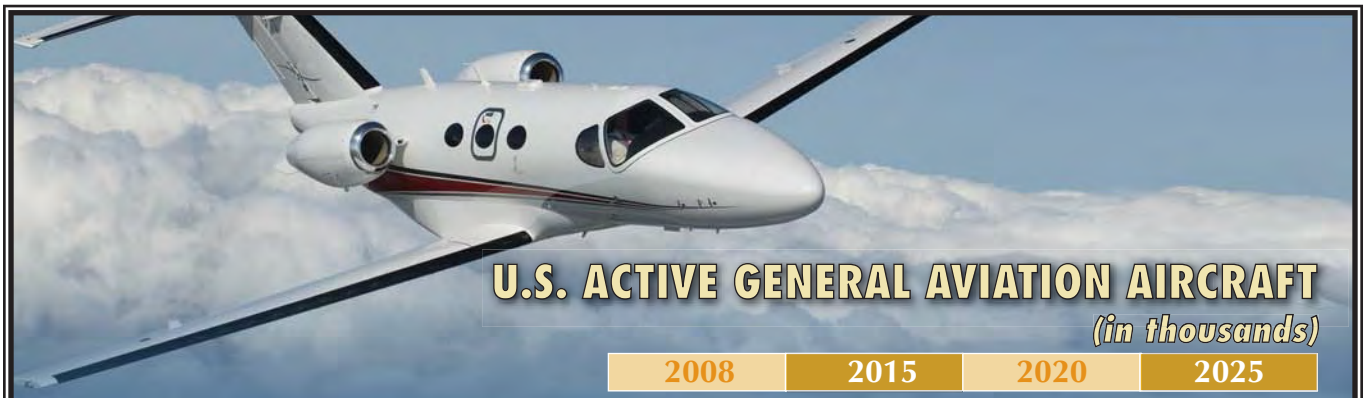
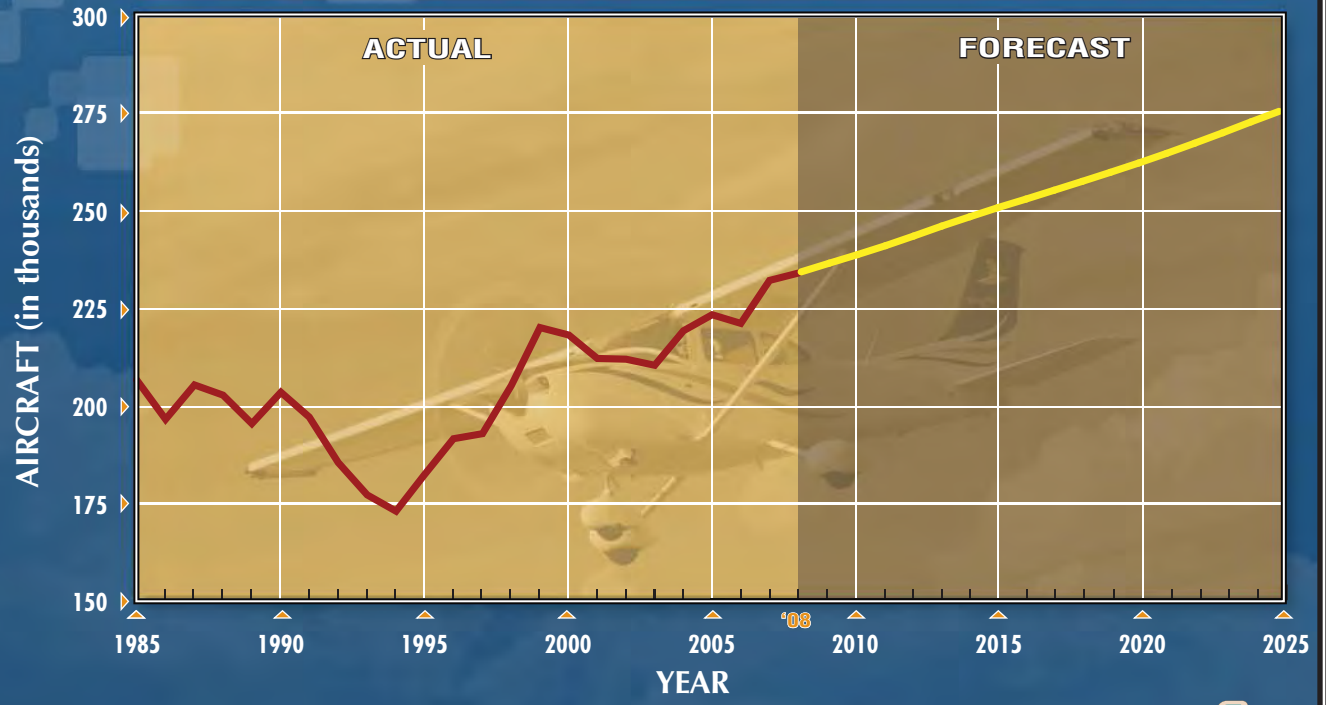


U.S. ACTIVE GENERAL AVIATION AIRCRAFT

(in thousands)

	2008	2015	2020	2025
FIXED WING				
PISTON				
Single Engine	146.6	143.5	144.9	148.5
Multi-Engine	19.1	17.9	17.0	16.0
TURBINE				
Turboprop	9.6	10.5	11.5	12.2
Turbojet	11.4	17.1	20.9	25.2
ROTORCRAFT				
Piston	3.1	4.6	5.3	5.9
Turbine	7.1	9.0	9.9	10.9
EXPERIMENTAL	24.1	29.1	32.0	34.6
SPORT AIRCRAFT	7.0	12.7	14.4	15.9
OTHER	6.0	6.1	6.0	6.0
TOTAL	234.0	250.5	261.8	275.2



Source: FAA Aerospace Forecasts, Fiscal Years 2009-2025.

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Exhibit B7
U.S. ACTIVE GENERAL AVIATION
AIRCRAFT FORECASTS

BASED AIRCRAFT

The number of aircraft based at an airport is, to some degree, dependent upon the nature and magnitude of aircraft ownership in the local service area. Therefore, the process of developing forecasts of based aircraft for ABQ begins with a review of historical aircraft registrations in the area.

Aircraft Ownership

Historical records of aircraft ownership in Bernalillo County were obtained from the FAA-maintained database of aircraft ownership. **Table B15** summarizes total aircraft registrations from 1993 to 2008 for Bernalillo County. In examining the specific type of aircraft growth, it is evident that turbine-powered aircraft have enjoyed the strongest growth rates. The number of turboprop aircraft registered to residents of the county has grown at an average annual rate of 1.4 percent, while the number of registered turbojet aircraft has grown at an annual rate of 16.8 percent, with a net addition of 56 aircraft. Single engine piston powered aircraft have had the largest numerical growth, growing by 58 aircraft, yet have grown at an average annual rate of only 0.7 percent. There was a net addition of 14 helicopters in the county between 1993 and 2008.

TABLE B15
Registered Aircraft
Bernalillo County

Year	Total	Single Engine Piston	Multi-Engine Piston	Turboprop	Turbojet	Helicopter
1993	666	532	81	22	6	25
1994	682	536	93	21	7	25
1995	703	547	94	29	8	25
1996	729	574	92	29	9	25
1997	704	554	82	32	8	28
1998	706	559	80	29	9	29
1999	747	587	81	36	12	31
2000	780	608	91	34	12	35
2001	789	603	95	42	12	37
2002	785	596	97	41	13	38
2003	785	590	105	30	17	43
2004	784	580	109	30	20	45
2005	808	599	114	25	32	38
2006	814	603	115	25	36	35
2007	840	580	107	37	80	36
2008	817	590	99	27	62	39
Avg. Ann.	1.4%	0.7%	1.3%	1.4%	16.8%	3.0%
% Growth	18.48%	9.83%	18.18%	18.52%	90.32%	35.90%
Total Growth	151	58	18	5	56	14

Source: FAA records

A review of the aircraft registrations reveals a couple of trends. First, business class aircraft registrations (turboprop and turbojet) are growing faster than all other types of aircraft in the county. Secondly, aircraft registrations in the county are growing. This indicates a potential growing demand for based aircraft in the region.

Since there are no recent forecasts of Bernalillo County registered aircraft, new forecasts of aircraft registrations have been prepared for this study. First, a time-series analysis of aircraft registrations since 1993 was completed, which resulted in a correlation coefficient of 0.92. Next, a regression analysis was completed which compared historical registered aircraft to population in Bernalillo County since 1993. This resulted in a correlation coefficient of 0.90. Since both of these analyses achieved a correlation coefficient higher than 0.90 (which indicates good predictive potential), these analyses were used to project future registered aircraft. Future registered aircraft demand was also examined by making comparisons against U.S. Active Aircraft.

Table B16 compares registered aircraft in Bernalillo County to active general aviation aircraft. As shown in the table, the percentage of U.S. active general aviation aircraft registered in Bernalillo County has fluctuated annually since 1993, from a low of 0.34 percent to a high of 0.394 percent. Since 1993, U.S. active aircraft have grown on average 1.9 percent annually, and Bernalillo County registered aircraft have grown at 1.4 percent annually. As shown in **Table B16**, maintaining the 2008 share of U.S. active aircraft (0.349 percent) constant through the planning period results in 1,009 registered aircraft in Bernalillo County by the year 2030.

Table B17 and **Exhibit B8** present a summary of the forecast for future registered aircraft in Bernalillo County. Of the three forecasts, the regression analysis of MSA population resulted in the strongest growth rate for registered aircraft of 2.0 percent annually. The share of U.S. active aircraft forecast projects registered aircraft growing at 1.0 percent annually, while the time-series projection results in aircraft growing at 1.3 percent annually.

The regression analysis of MSA population more than likely overstates potential registered aircraft growth in the county. This annual growth rate is nearly 42 percent higher than the historic average in the county over the past 16 years. The time-series analysis nearly matches the 16-year annual growth rate, while the share U.S. active aircraft forecast moderates growth consistent with national trends. The preferred planning forecast lies between the time-series forecast and share of U.S. active aircraft forecast. This forecast captures the slowing of the national growth in general aviation active aircraft, but maintains this growth slightly higher than national rates to capture the potential for increased demand in the region as the population increases.

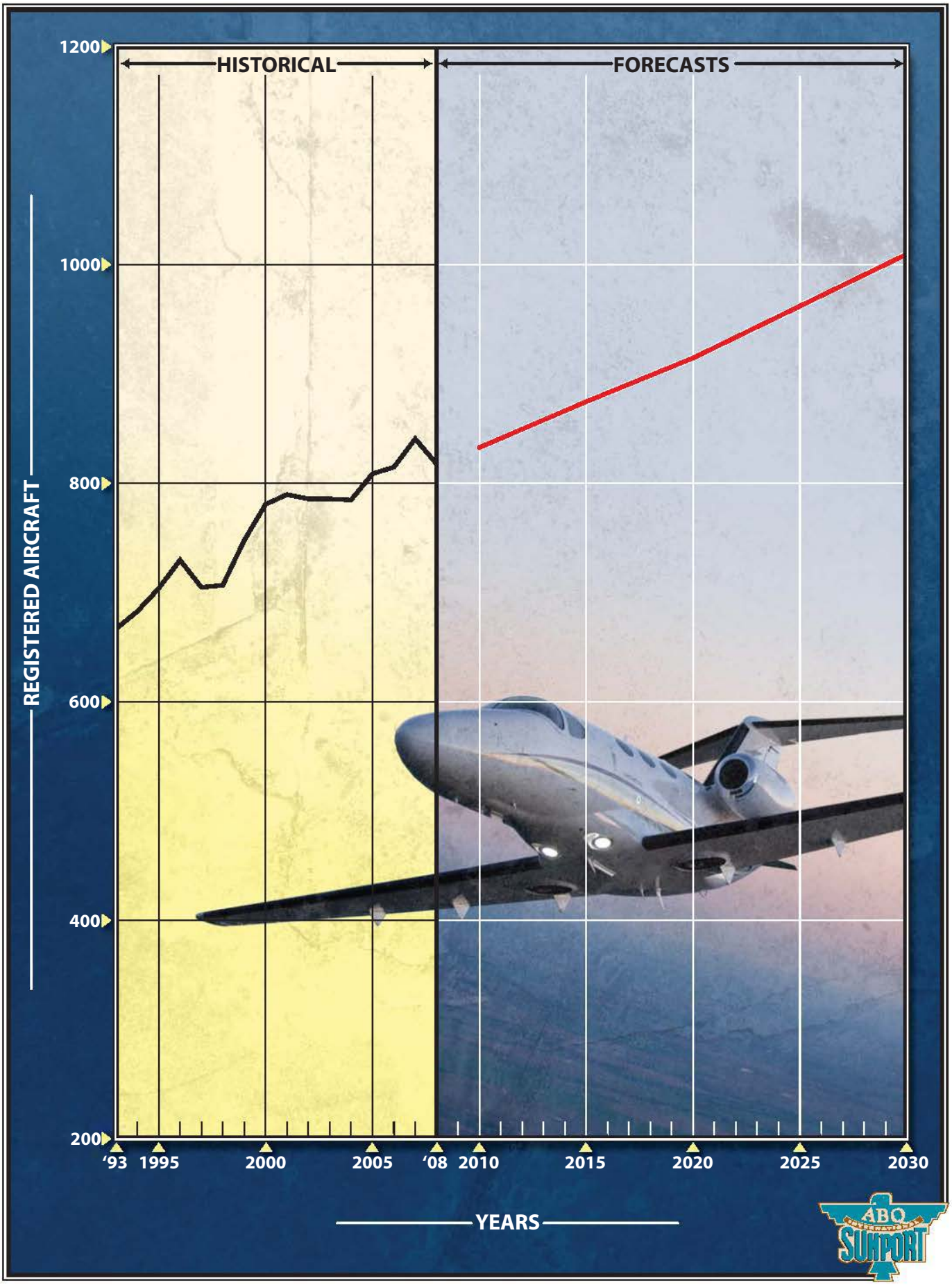


Exhibit B8
BERNALILLO COUNTY
REGISTERED AIRCRAFT

TABLE B16
Share of U.S. Active Aircraft
Airport Service Area

Year	Registered Aircraft	U.S. Active Aircraft	Sunport Share
HISTORICAL			
1993	666	177,119	0.376%
1994	682	172,936	0.394%
1995	703	188,089	0.374%
1996	729	191,129	0.381%
1997	704	192,414	0.366%
1998	706	204,710	0.345%
1999	747	219,464	0.340%
2000	780	217,533	0.359%
2001	789	211,446	0.373%
2002	785	211,244	0.372%
2003	785	209,606	0.358%
2004	784	219,319	0.350%
2005	808	224,262	0.364%
2006	814	221,942	0.351%
2007	840	231,606	0.359%
2008	817	234,015	0.349%
Avg. Ann. Growth Rate	1.4%	1.9%	
FORECAST			
2010	832	238,415	0.349%
2015	874	250,450	0.349%
2020	914	261,840	0.349%
2030	1,009	289,234	0.349%
Avg. Ann. Growth Rate	1.0%	1.0%	

Source for Historical Registered Aircraft: FAA records
Source for Historical and Forecast U.S. Active Aircraft: 2009 FAA Aerospace Forecasts, Selected Years, 2020 and 2025 Extrapolated
Registered Aircraft Forecasts: Coffman Associates analysis

TABLE B17
Registered Aircraft Forecast Summary

Forecast	Existing	2010	2015	2020	2030
Share of U.S. Active Aircraft		832	874	914	1,009
Regression Analysis - MSA Population		907	1,003	1,096	1,269
Time-Series (1993-2008)		869	926	983	1,097
Preferred Planning Forecast (Airport Service Area)	**817**	**832**	**900**	**950**	**1,050**

Source: Coffman Associates analysis

Based Aircraft Forecasts

Table B18 summarizes available based aircraft totals at ABQ for 1990, 1991, 1999, and 2008. As shown in the table, based aircraft totals have fluctuated during this time period, reaching as high as 227 in 1999. In the past 10 years, based aircraft levels have declined by more than 50 percent to a low of 145. As stated before, this is most likely due to aircraft moving to Double Eagle II Airport, the designated reliever airport for ABQ.

TABLE B18
Share of Bernalillo County Registered Aircraft

Year	ABQ Based Aircraft	Registered Aircraft (Powered)	ABQ Share
HISTORICAL			
1990	192	606	31.7%
1991	189	600	31.5%
1999	227	721	31.5%
2008	145	817	17.7%
Avg. Ann. Growth Rate	-1.5%	1.7%	
FORECAST			
2010	147	832	17.7%
2015	159	900	17.7%
2020	168	950	17.7%
2030	186	1,050	17.7%
Avg. Ann. Growth Rate	1.1%	1.1%	

Source for historical based aircraft: 2002 Master Plan (1997, 1999, 2000), Airport records (2008)
Source for historical registered aircraft: FAA
Source for forecast registered aircraft: Coffman Associates analysis
Based aircraft forecasts: Coffman Associates analysis

Because actual based aircraft levels were not available on an annual basis, statistical methods of projected based aircraft (such as time-series and regression analyses) were not performed. Furthermore, past based aircraft trends are most likely not indicative of future growth potential at ABQ. Statistical measures such as time-series analysis and regression analyses rely on past performance, in part, for establishing indicators of future demand. Several factors will influence growth at ABQ in the future, which has not occurred at the airport in the past. This includes the continued development of Double Eagle II Airport and commercial aviation growth at ABQ. The transfer of existing general aviation demand from the Sunport will affect future growth at Double Eagle II Airport. Factors which would affect a transfer of demand include a cost difference between Double Eagle II Airport and the Sunport and/or increased air carrier, military, and air cargo demand at the Sunport affecting general aviation users.

Future based aircraft potential has been examined as a share of Bernalillo County registered aircraft. The ABQ share of Bernalillo County registered aircraft generally remained static in the 1990s at approximately 31.5 percent of registered aircraft. In 2008, this had fallen to 17.7 percent of registered aircraft. It is expected that based aircraft will not grow as a percentage of registered aircraft due to influences described above. Therefore, future based aircraft potential at ABQ has been projected at a constant share of projected registered aircraft in the county. As

shown in **Table B18,** maintaining the 2008 share of Bernalillo County registered aircraft constant through the planning period results in based aircraft growing at a rate similar to that projected for Bernalillo County registered aircraft. This results in approximately 186 based aircraft at ABQ by the year 2030.

The FAA independently examined future based aircraft for ABQ. The 2008 FAA *Terminal Area Forecast* (TAF) used a base year total of 254 based aircraft growing to 486 by 2025. The source for the FAA base year data is unknown. It is clearly evident that based upon the counts developed by the City, actual based aircraft levels are much lower than assumed by the FAA and that the TAF clearly overstates based aircraft levels and potential.

While the continued emergence of Double Eagle II Airport as a reliever for ABQ has caused a decline in based aircraft at ABQ, several factors appear to support future growth in based aircraft demand for ABQ. As shown earlier, there is growing aircraft ownership in the Bernalillo County area that will need a location to base. ABQ is conveniently located within the central portions of the City and is the closest airport for residents in the central and eastern portions of the City. The Sunport's location is also convenient from the central business district for business aircraft owners which may also choose to base corporate-owned aircraft at ABQ.

For planning purposes, the based aircraft forecasts have been rounded to 160 in 2010, 170 in 2015, and 190 in 2030.

Based Aircraft Fleet Mix

Table B19 indicates the 2008 based aircraft fleet mix as being comprised mainly of single engine piston-powered aircraft. Comparing the 2008 fleet mix to the 1999 fleet mix indicates that the number of single engine and multi-engine piston aircraft declined, while turbojet aircraft expanded and helicopters remained static.

The projected based aircraft fleet mix has been examined as a share of total based aircraft. This projection closely follows the national trend of growing business class aircraft (turboprops and turbojets) and declining percentages of single engine piston aircraft. Turboprop and turbojet aircraft are the fastest growing segments of active aircraft nationally. These categories are expected to grow significantly at ABQ. Based on national trends, more businesses will own and operate turboprop and turbojet aircraft through the planning period. This national trend will add turbine-powered aircraft through the planning period.

While the single engine piston category declines as a percentage of total based aircraft, the total number of single engine piston aircraft is expected to grow by eight, the highest numerical change of all aircraft categories. Multi-engine piston aircraft will decline as a percentage of total based aircraft, adding eight new aircraft through the planning period. The cost of a new multi-engine piston aircraft is comparable to many used turboprops, which has led to their decline in use. The operational costs are also too high for widespread recreational aircraft ownership and use. Multi-engine piston aircraft will always have a place in some aircraft charter ac-

tivities. Nationally, helicopters are growing at nearly three times the rate of fixed-wing piston-powered aircraft. This will lead to increases in helicopters at ABQ over the planning period.

TABLE B19
Total Based Aircraft Fleet Mix

Year	Total	Single Engine Piston	Multi-Engine Piston	Turbojet	Helicopter
HISTORICAL					
1990	192	121	61	7	3
1999	227	135	79	8	5
2008	145	68	53	21	3
PERCENTAGE SHARE					
1990	100.0%	63.0%	31.8%	3.6%	1.6%
1999	100.0%	59.5%	34.8%	3.5%	2.2%
2008	100.0%	46.9%	36.6%	14.5%	2.1%
FORECAST					
2010	147	68	52	24	3
2015	160	70	56	31	3
2020	170	71	58	38	3
2030	190	76	61	47	6
PERCENTAGE SHARE					
2010	100.0%	46.0%	36.0%	16.0%	2.0%
2015	100.0%	44.0%	35.0%	19.0%	2.0%
2020	100.0%	42.0%	34.0%	22.0%	2.0%
2030	100.0%	40.0%	32.0%	25.0%	3.0%
Change	45	8	8	26	3

Source: Coffman Associates analysis

ANNUAL OPERATIONS

An aircraft operation is either a takeoff or landing. Aircraft operations can be classified as either local or itinerant. Local operations are performed by aircraft which:

(a) Operate in the local traffic pattern or within sight of the airport;

(b) Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the airport;

(c) Execute simulated instrument approaches or low passes at the airport.

Itinerant operations are all other operations and essentially represent the originating or departing aircraft.

Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use since business aircraft are used primarily to carry people from one location to another. Historically, general aviation local operations have

been quite low due to the level of air carrier and military activity at ABQ. Most local training activity is conducted at Double Eagle II Airport.

Table B20 depicts this historical share of ABQ general aviation operations as a percentage of general aviation operations at towered airports across the country. The ABQ share of U.S. itinerant general aviation operations has ranged from a low of 0.202 percent in 2005 to a high of 0.357 percent in 1989. In the past five years, the share of itinerant general aviation operations has averaged 0.220 percent. The ABQ share of U.S. itinerant general aviation operations is projected to grow to 0.276 during the planning period, driven by business/corporate aircraft use of the airport.

TABLE B20
General Aviation Operations Forecast

Year	Total	General Aviation Itinerant	Local	GA Itinerant Ops. U.S. Towered Airports	% at Sunport	GA Local Ops. U.S. Towered Airports	% at Sunport
HISTORICAL							
1989	80,821	78,917	1,904	22.1	0.357%	17.1	0.011%
1990	79,711	77,147	2,564	23.1	0.334%	16.6	0.015%
1991	75,311	71,891	3,420	22.2	0.324%	16.3	0.021%
1992	73,617	70,741	2,876	22.1	0.320%	15.5	0.019%
1993	69,265	65,719	3,546	21.1	0.311%	15.2	0.023%
1994	68,316	63,680	4,636	21.1	0.302%	15.1	0.031%
1995	52,204	47,428	4,776	20.9	0.227%	14.5	0.033%
1996	59,433	54,411	5,022	20.8	0.262%	15.2	0.033%
1997	67,179	59,292	7,887	21.7	0.273%	16.0	0.049%
1998	71,798	59,192	12,606	22.1	0.268%	17.0	0.074%
1999	72,692	62,070	10,622	23.0	0.270%	17.0	0.062%
2000	74,593	63,184	11,409	22.8	0.277%	17.0	0.067%
2001	73,861	59,637	14,224	21.4	0.279%	16.2	0.088%
2002	76,466	67,647	8,819	21.4	0.316%	16.2	0.054%
2003	64,657	59,285	5,372	20.2	0.293%	15.3	0.035%
2004	44,696	41,353	3,343	20.0	0.207%	14.9	0.022%
2005	43,651	38,953	4,698	19.3	0.202%	14.8	0.032%
2006	44,297	39,677	4,620	18.7	0.212%	14.4	0.032%
2007	44,716	40,976	3,740	15.5	0.264%	14.5	0.026%
2008	40,729	37,468	3,261	17.3	0.217%	13.9	0.023%
FORECAST							
2010	37,900	34,900	3,000	16.1	0.217%	13.2	0.023%
2015	41,200	38,100	3,300	17.3	0.220%	13.3	0.025%
2020	49,500	46,400	4,400	18.7	0.248%	13.6	0.032%
2030	62,900	59,600	5,400	21.6	0.276%	14.2	0.038%

Source for historical Sunport operations: FAA records
Source for historical and forecast U.S. towered operations: FAA Aerospace Forecasts, selected years
Source for forecast general aviation itinerant and local operations: Coffman Associates analysis

In three of the last five years, the ABQ local operations share of total U.S. local operations at towered airports has averaged approximately 0.024 percent. Local operations at the airport have varied over the past five years, falling to their lowest level in 2008 at 3,261 operations. This is the fourth lowest level in the past 20 years. With piston-powered based aircraft numbers declining and the emergence of Double Eagle II Airport, it is expected that local general aviation operations will not significantly grow at ABQ. For this reason, future local general aviation operations are projected to grow only slightly to 0.038 percent of U.S. local general aviation operations by 2030.

OTHER AIR TAXI OPERATIONS

Air taxi activity has been independently reported by air traffic control towers since 1972 and was instituted to include commuter passenger and all-cargo airlines, as well as for-hire general aviation operations. Commuter airline operations were forecast earlier along with the major airline operations. Subtracting the commercial passenger and all-cargo operations from the air taxi operations reported by the ATCT indicates other air taxi operations totaled 20,737 in 2008. This is up significantly from 1,164 similar operations in 1999. This operations level was forecast to increase at a rate similar to that projected for general aviation itinerant operations. The non-scheduled air taxi operations forecasts for Albuquerque International Sunport are presented in the summary table at the end of this chapter.

MILITARY OPERATIONS

Military operations are an important factor in air traffic activity at Albuquerque International Sunport because of the joint use agreement with Kirtland Air Force Base. The 58th Special Operations Wing owns and maintains helicopters and C-130 aircraft. The 150th Tactical Fighter Group of the New Mexico Air National Guard (NMANG) operates F-16 fighter aircraft, although this is expected to transition to another aircraft type.

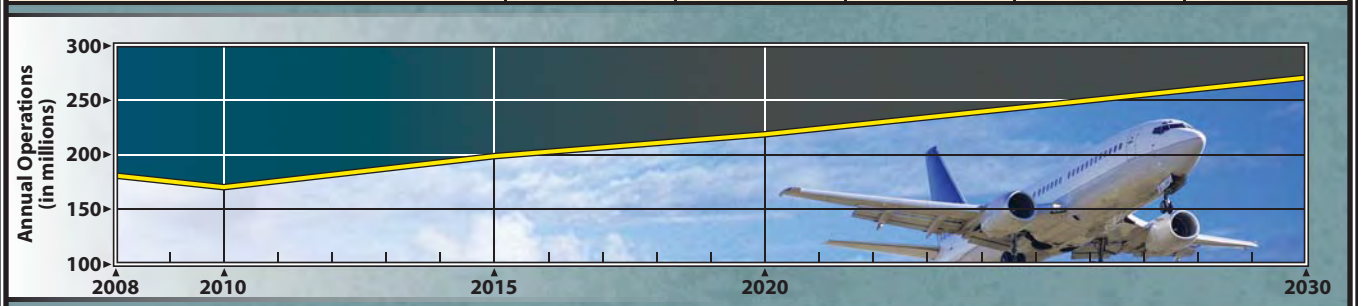
Table B21 presents the annual military operations since 1990 at ABQ. Military operations in 2007 and 2008 were down due to based aircraft deployments.

Future activity is dependent upon the future missions at the base. The Air Force is currently examining several mission changes at the airport which would increase the number of C-130 aircraft. The Air National Guard is expected to transition from F-16 aircraft to the C-130 as well. For this forecast, military operations are forecast to remain constant at around 33,600 annual operations in the future. This is similar to the average operations between 1990 and 2008.

Exhibit B9 summarizes all forecasts of activity for ABQ through the planning period.

08EA02-B9-8/7/09

	2008	2010	2015	2020	2030
AIRLINE ACTIVITY					
Annual Enplaned Passengers	3,259,920	3,000,000	3,600,000	4,100,000	5,100,000
Annual Operations	86,334	76,800	89,400	98,500	117,900
AIR FREIGHT / AIR CARGO					
All-Cargo Airlines					
Annual Enplaned Cargo (tons)	23,000	22,300	28,800	31,400	39,200
Annual Deplaned Cargo (tons)	41,133	39,600	51,300	55,800	69,700
Subtotal Air Cargo	64,133	61,900	80,100	87,200	108,900
Annual Operations	10,818	11,000	11,400	11,800	13,400
Airline Belly Freight					
Annual Enplaned Belly Freight (tons)	1,096	1,100	1,400	1,500	1,900
Annual Deplaned Belly Freight (tons)	2,893	2,900	3,700	4,100	5,000
Subtotal Belly Freight (tons)	3,989	4,000	5,100	5,600	6,900
Total Air Cargo and Belly Freight					
Enplaned (tons)	24,096	23,400	30,200	32,900	41,100
Deplaned (tons)	44,026	42,500	55,000	59,900	74,700
Total	**68,122**	**65,900**	**85,200**	**92,800**	**115,800**
ANNUAL OPERATIONS					
Itinerant					
Air Carrier	86,334	76,800	89,400	98,500	117,900
Air Cargo	10,818	11,000	11,400	11,800	13,400
Air Taxi	20,737	21,100	22,100	23,100	25,100
General Aviation	37,468	34,900	38,100	46,400	59,600
Military	18,105	18,500	22,800	22,800	22,800
Total Itinerant Operations	**173,462**	**162,300**	**183,800**	**202,600**	**238,800**
Local					
General Aviation	3,261	3,000	3,300	4,400	5,400
Military	3,830	4,300	10,800	10,800	10,800
Total Local Operations	**7,091**	**7,300**	**14,100**	**15,200**	**16,200**
Total Annual Operations	**180,553**	**169,600**	**197,900**	**217,800**	**255,000**
BASED AIRCRAFT FLEET MIX					
Single Engine Piston	68	68	70	71	76
Multi-Engine Piston	53	52	56	58	61
Jet	21	24	31	38	47
Helicopter	3	3	3	3	6
Total Based Aircraft	**145**	**147**	**160**	**170**	**190**



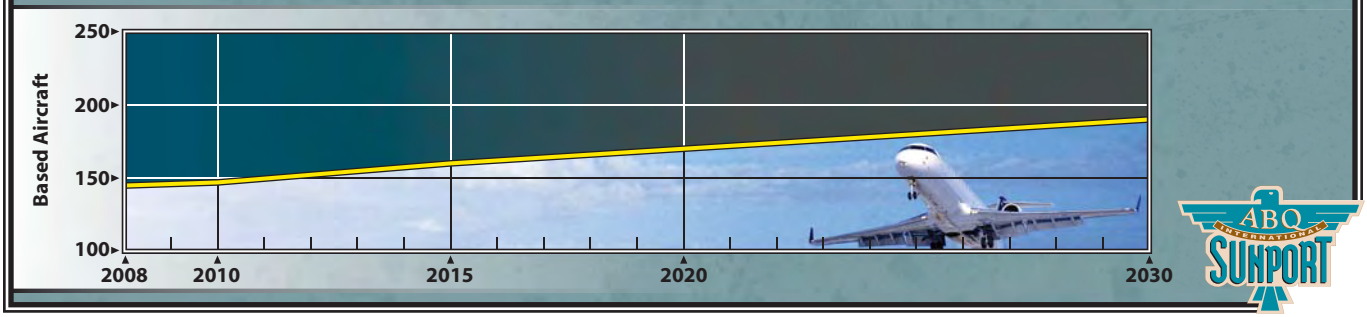


TABLE B21
Military Operations

Year	Itinerant	Local	Total
HISTORICAL			
1990	30,172	5,497	35,669
1991	27,831	7,483	35,314
1992	23,570	5,928	29,498
1993	23,775	6,540	30,315
1994	23,048	8,066	31,114
1995	19,480	8,416	27,896
1996	16,466	7,543	24,009
1997	21,436	12,278	33,714
1998	21,879	21,001	42,880
1999	23,413	20,348	43,761
2000	22,232	20,076	42,308
2001	22,338	23,440	45,778
2002	29,298	17,599	46,897
2003	21,907	11,753	33,660
2004	21,053	7,682	28,735
2005	23,683	6,557	30,240
2006	23,509	7,258	30,767
2007	18,956	4,715	23,671
2008	18,105	3,830	21,935
FORECAST			
2010	18,500	4,300	22,800
2015	22,800	10,800	33,600
2020	22,800	10,800	33,600
2030	22,800	10,800	33,600

Source for historical data: FAA records

Source for forecasts: Coffman Associates analysis

Appendix C

WIND AND AIRFIELD CAPACITY ANALYSIS

Appendix C
WIND AND AIRFIELD CAPACITY ANALYSIS

This appendix provides additional data and analysis to support the conclusions made as part of the Purpose and Need statement included in Chapter One. This chapter includes a detailed analysis of the 10 years of historical wind observations made at the airport and how this relates to minimum wind coverage requirements for runway orientation as specified by the Federal Aviation Administration (FAA). Additionally, information is also provided on the results of a simulation of the operation of the airfield which was conducted to determine airfield capacity and identify the level of the delay experienced by aircraft users.

AIRPORT REFERENCE CODE

To provide an understanding of how the physical and operational characteristics of aircraft operating at the airport relate to airport design components, such as minimum wind coverage, this section of the appendix provides an explanation of the FAA's Airport Reference Code.

The ARC is the FAA's coding system which relates airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. The ARC has two components. The first component, depicted by a letter, is the aircraft approach category that relates to aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group that relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-14, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more, but less than 121 knots.

Category C: Speed 121 knots or more, but less than 141 knots.

Category D: Speed 141 knots or more, but less than 166 knots.

Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan or tail height. The six ADGs used in airport planning are as follows:

Group I: Wingspan up to but not including 49 feet or tail heights up to but not including 20 feet.

Group II: Wingspan above 49 feet but including 79 feet or tail heights above 20 but not including 30 feet.

Group III: Wingspan above 79 feet but including 118 feet or tail heights above 30 but not including 45 feet.

Group IV: Wingspan above 118 feet but including 171 feet or tail heights above 45 but not including 60 feet.

Group V: Wingspan above 171 feet but including 214 feet or tail heights above 60 but not including 66 feet.

Group VI: Wingspan above 214 feet but including 262 feet or tail heights above 66 but not including 80 feet.

With few exceptions, approach categories C and D aircraft are jet aircraft. A few category B aircraft are also turbojets. With few exceptions, civilian turboprop and piston engine aircraft are in categories A and B. Approach category E aircraft are made up almost exclusively of the highest performance military jets.

The FAA requires that the selection of an ARC reflect the aircraft or family of aircraft which conducts a minimum of 500 annual operations. Since the ARC designation is reflective of actual aircraft use, a separate ARC can be assigned to each runway at the Sunport. The 2002 Master Plan designated Runway 8-26 with ARC D-V, Runway 3-21 was assigned ARC D-IV, Runway 12-30 was assigned ARC B-III, and Runway 17-35 was assigned ARC D-IV.

WIND ANALYSIS

For the operational safety and efficiency of an airport, it is desirable for the primary runway of an airport's runway system to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of wind components flowing across, or at an angle, to the direction of travel of an aircraft that is landing or taking off (defined as a crosswind).

Paragraph 203(b) of FAA AC 5300-13 Change 15, *Airport Design*, states that, "…when a runway orientation provides less than 95 percent coverage for any aircraft projected to use the airport on a regular basis, a crosswind runway is recommended." The 95 percent wind coverage is computed on the basis of the crosswind not exceeding 10.5 knots for ARCs A-I and B-I, 13 knots for ARCs A-II and B-II, 16 knots for ARCs A-III, B-III, and C-I through D-III, and 20 knots for ARCs A-IV through D-VI.

Consistent with the requirements of AC 5300-13, wind data specific to Albuquerque International Sunport has been collected to determine wind coverage for the airport. For the analysis, data was collected between 2000 and 2009, covering a 10-year period and including 79,880 individual observations.

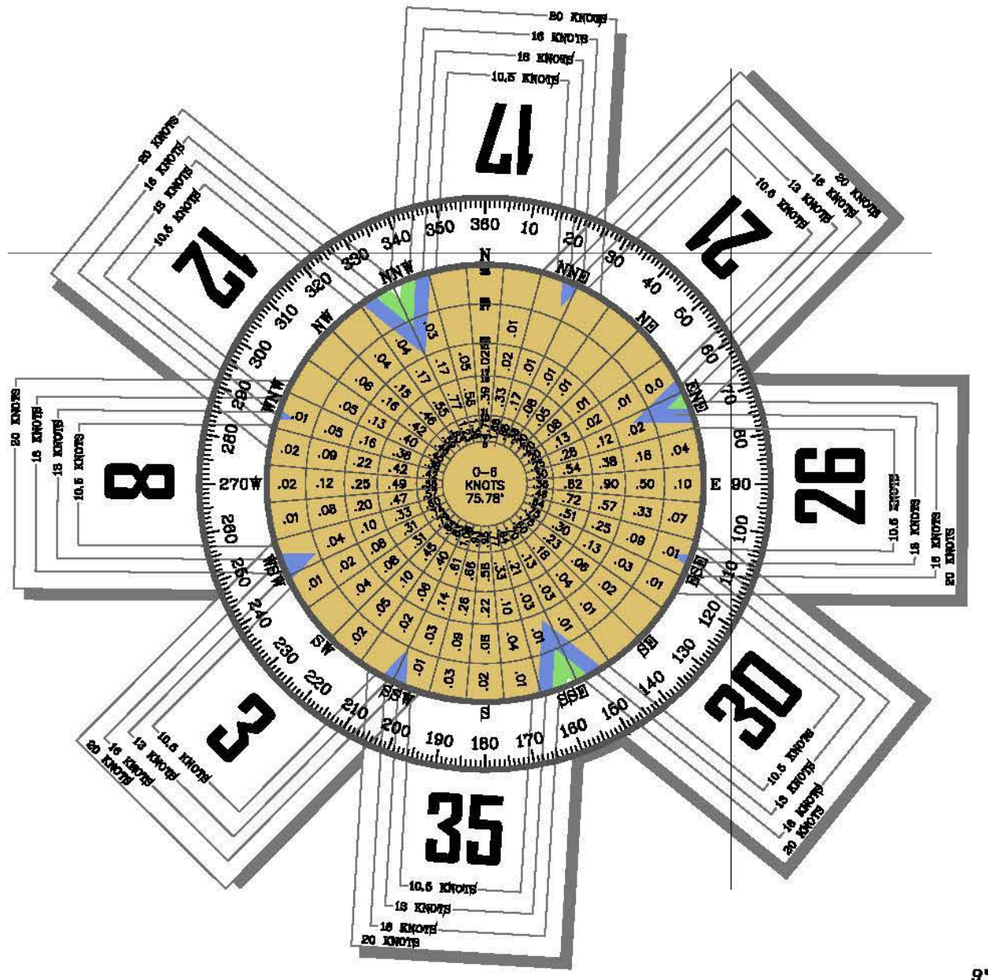
ALL-WEATHER WIND COVERAGE

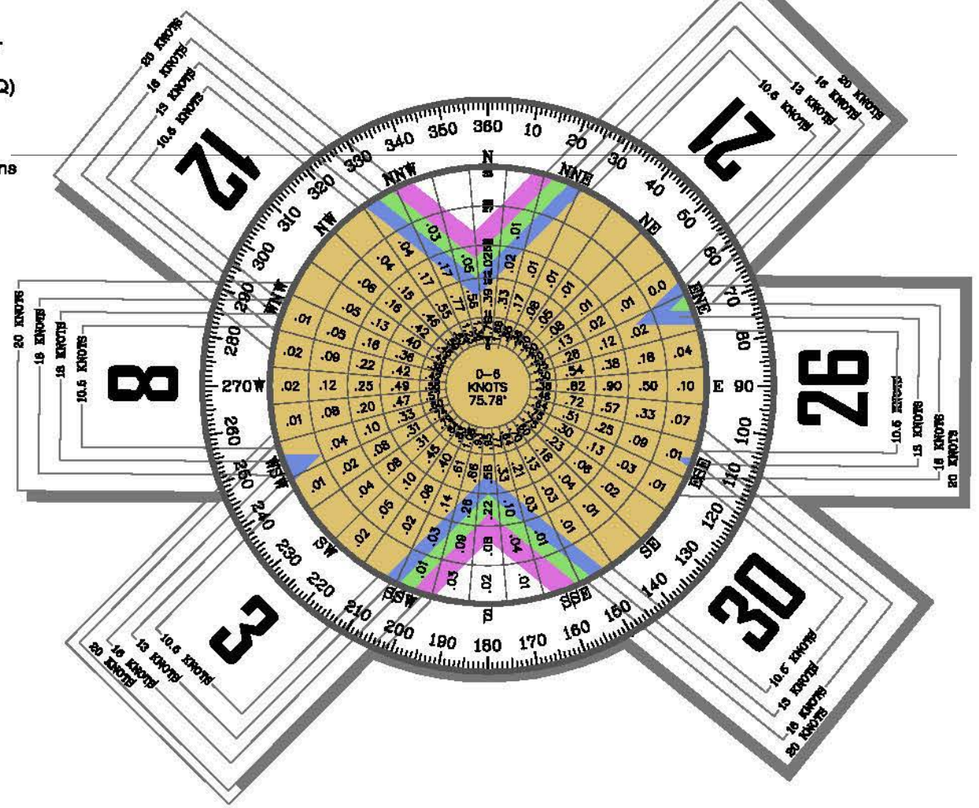
Exhibit C1 depicts the wind rose for all-weather conditions at the airport utilizing wind data collected by the National Oceanic and Atmospheric Association (NOAA). **Table C1** summarizes the all-weather wind coverage for each runway at the airport, individually and combined, for all available observations. As shown in the table, no single runway orientation provides 95 percent wind coverage for the 10.5 knot or 13 knot crosswind component. All runways individually, with the exception of Runway 17-35, provide greater than 95 percent wind coverage for the 16 knot crosswind component. Each runway individually provides greater than 95 percent wind coverage for the 20 knot crosswind component.

Based upon this analysis, more than one runway orientation is needed at Albuquerque International Sunport to meet the 95 percent coverage requirement specified above for the 10.5 knot and 13 knot crosswind component. As shown on the last line of table, the combined wind coverage of Runway 8-26, Runway 3-21, and Runway 12-30 is 98.43 percent for the 10.5 knot crosswind component and 99.43 percent for the 13.0 knots crosswind component. Therefore, without Runway 17-35 the airport can still meet the minimum wind coverage requirement as specified by the FAA.

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 3–21	*85.15%*	*90.61%*	*95.69%*	*98.62%*
Runway 8–26	*90.01%*	*93.89%*	*97.70%*	*99.23%*
Runway 12–30	*88.28%*	*93.35%*	*97.42%*	*99.23%*
Runway 17–35	*85.34%*	*89.28%*	*93.39%*	*96.85%*
Runway 8–26/3–21	*94.73%*	*97.56%*	*99.17%*	*99.83%*
Runway 8–26/12–30	*94.82%*	*97.40%*	*99.03%*	*99.73%*
Runway 8–26/17–35	*98.37%*	*99.41%*	*99.85%*	*99.99%*
Runway 8–26/3–21/12–30	*98.43%*	*99.43%*	*99.82%*	*99.97%*
Runway 8–26/3–21/12–30/17–35	*99.96%*	*99.99%*	*100.00%*	*100.00%*





SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Albuquerque International (ABQ)
Albuquerque, New Mexico

OBSERVATIONS:
79,880 All Weather Observations
2000-2009

NORTH

Magnetic Declination
9° 18' East (August 2010)
Annual Rate of Change
00° 07' West (August 2010)

Exhibit C1
ALL WEATHER WINDROSE

TABLE C1
Wind Coverage Summary

	Crosswind Component			
Runway	**10.5 Knots**	**13.0 Knots**	**16.0 Knots**	**20.0 Knots**
3-21	85.15%	90.61%	95.69%	98.62%
8-26	90.01%	93.89%	97.70%	99.23%
12-30	88.28%	93.35%	97.42%	99.23%
17-35	85.34%	89.28%	93.39%	96.85%
8-26/3-21/12-30/17-35	99.96%	99.99%	100.00%	100.00%
8-26/3-21/12-30	98.43%	99.43%	99.82%	99.97%

Source: National Oceanic and Atmospheric Administration
Albuquerque International Sunport
2000 to 2009
79,880 total observations

To quantify the potential operational impact of the closure of Runway 17-35, the total percentage drop in coverage can be correlated to an operational reduction. The 1.53 percent decline in wind coverage for 10.5 knot crosswinds would potentially have affected approximately 472 total operations the previous 12 months ending July, 2010 by small single-engine and multi-engine piston aircraft. The 13-knot crosswind coverage would be reduced by 0.56 percent to 99.43 percent without Runway 17-35. This would have potentially affected approximately 114 total operations by small- to medium-sized turbine and business jet aircraft. The reduction in the 16- and 20-knot crosswind coverage would have potentially affected 169 operations by large commercial service aircraft. In total, the closure of Runway 17-35 would have potentially affected a total of 758 operations the previous 12 months ending July, 2010, or 0.5 percent of total operations. A summary of the estimated total's effect on current and forecasted operations for 2015 and 2020 is presented in **Table C2**.

TABLE C2
Operations Affected By Runway 17-35 Closure

Airport Reference Code Groupings	12 Months Ending July, 2010	2015	2020
A-I to B-I	472	476	528
A-II to B-II	114	200	214
A-III to D-III	169	203	226
A-IV to D-VI	3	3	4
Total	758	882	972
Percentage of Total Operations	0.5%	0.4%	0.4%

Source: Coffman Associates analysis

Pilot comments made during early outreach efforts for the EA suggested that the wind is often above 40 knots and straight down Runway 17-35, which requires the use of Runway 17-35 for a safe landing. Wind observations for the 10-year period from 2000 to 2009 indicated that there

was one observation of winds of 40 knots or more out of 79,880 total observations. This observation was from the east and would have required the use of Runway 8.

AIRFIELD CAPACITY ANALYSIS

The demand/capacity analysis originally developed for the Master Plan *(*which was finalized in July 2003) has been updated for the Environmental Assessment using updated wind analysis, aircraft mix and operations data, forecasts, and airfield capacity analysis.

AIRCRAFT FLEET MIX, OPERATIONS DATA, AND FORECASTS

New operations and fleet mix data were prepared for the development of new aviation demand forecasts using 2008 calendar year data. Peaking characteristics were developed using daily operations data for the peak month of April 2008. Aircraft mix characteristics was updated from actual flight tracking data that was available for the 2003-2008 calendar year period. This included over one million individual operations by aircraft type. In the peak month of April 2008, the tower recorded 16,229 operations, and 724 operations were recorded on the peak day of April (18, a Friday). For 2008, the tower recorded 180,553 total operations.

The new aviation demand forecasts (included in the Environmental Assessment as **Appendix B**) were compared to the FAA's *Terminal Area Forecast*, and each of the major forecast categories (passenger enplanements, commercial operations, and total operations) fell within 10 percent of the TAF within the five-year forecast period. They were subsequently submitted to the FAA for review and approval.

The operations forecasts which were developed with the new aviation demand forecasts are summarized in **Table C3**. Actual calendar year operations in 2009 were 13.9 percent below prior year (2008) activity and 44.4 percent below 1999 activity.

TABLE C3
Operations Forecast Summary
Albuquerque International Sunport

	Actual 2008	Forecast 2015	Forecast 2030
General Aviation Operations			
Itinerant	37,468	38,100	59,600
Local	3,261	3,300	5,400
Total	40,729	41,400	65,000
Air Carrier and Air Taxi Operations			
Majors	66,046	66,150	90,780
Regionals	20,288	23,250	27,120
All-Cargo Majors	5,158	5,400	6,600
All-Cargo Regionals	5,660	6,000	6,800
Other Air Taxi	20,737	22,100	25,100
Total	117,889	122,900	156,400
Military			
Itinerant	18,105	22,800	22,800
Local	3,830	10,800	10,800
Total	21,935	33,600	33,600
Total Airport Operations	180,553	197,900	255,000

OPERATIONAL CAPACITY

A detailed discussion of the input assumptions for the capacity analysis undertaken for the Master Plan may be found in Volume II, Section 5. The operational capacity of the airfield has been calculated using the methodology adopted by the FAA and detailed in Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*. The methodology provides for the calculation of the hourly capacity for each runway, a weighted hourly capacity (taking into consideration the percentage of time each configuration is used), the annual service volume (a formula-based calculation which is the product of the weighted hourly capacity and peak demand ratios), and annual aircraft delay estimates. The airfield layout, meteorological conditions, aircraft mix, runway use, percentage arrivals and touch-and-go, and exit locations all contribute to capacity.

The airfield layout and exit ratings have been assumed to remain consistent with the previous evaluations undertaken for the Master Plan. The airport is also assumed to operate under visual meteorological conditions (VMC) 98 percent of the time: the remaining two percent is assumed under instrument meteorological conditions. New wind summaries were used to verify that there has been no change in the runway usage based upon the wind coverage provided by each runway alignment. New operations data, fleet mix, and peaking characteristics have been updated based upon the information outlined in the previous paragraphs.

AIRCRAFT MIX/TOUCH-AND-GO/ARRIVALS PERCENTAGE

For purposes of airfield capacity analysis, aircraft are grouped into four categories: A and B aircraft (less than 12,500 pounds), C aircraft (12,500-300,000 pounds), and D aircraft (greater than 300,000 pounds). The 2008 baseline VMC condition is 29.9 percent Class A and B, 67.1 percent Class C, and 3.0 percent Class D. For the short term period (2015 forecast), the following percentages are assumed: 27.9 percent A/B, 68.6 percent C, and 3.5 percent D. Long term assumptions (2030 forecast) are: 30.4 percent A/B, 65.7 percent C, and 4.0 percent D. The touch-and-go percentage is four percent in 2008, seven percent in 2015, and six percent in 2030. Arrivals are assumed to be 50 percent of total operations in peak periods.

HOURLY CAPACITIES

While some of the runways at ABQ may accommodate all aircraft operational categories, others are limited (or restricted) because of pavement strength or length. This, in turn, affects the hourly capacity which has been calculated for each runway. The hourly capacities which have been calculated for each operational situation under the existing operating configuration have been summarized in **Exhibit C2**. For the operating configuration with Runway 17-35 closed, the hourly capacities have been summarized in **Exhibit C3**.

WEIGHTED HOURLY CAPACITY

The weighted capacity reflects usage during each of the operational conditions. It has been assumed in this analysis that Runway 17-35 is used two percent of the time under visual flight rules (VFR). The calculated weighted hourly capacity for the baseline condition is 90.6 operations, dropping to 76.7 in the short term, and 75.5 in the long term. Without Runway 17-35, the baseline weighted capacity is 90.1, 76.3 in the short term, and 75.1 in the long term.

ANNUAL SERVICE VOLUME

The annual service volume is calculated as the product of the following: a) weighted hourly capacity, b) the ratio of annual demand to daily demand in peak month, and c) the ratio of average daily demand to average peak hour demand during the peak month. Each of the baseline and forecast conditions has been calculated with and without Runway 17-35 for comparison. As noted in **Table C4**, the closure of Runway 17-35 has limited impact on the annual service volume.

RUNWAY USE SCENARIO	HOURLY CAPACITY	RUNWAY USE SCENARIO	HOURLY CAPACITY
	2010: 106 SHORT: 105 LONG: 103 % of Year: 68		2010: 75 SHORT: 75 LONG: 75 % of Year: 4
	2010: 102 SHORT: 100 LONG: 98 % of Year: 4		2010: 72 SHORT: 72 LONG: 70 % of Year: 2
	2010: 95 SHORT: 95 LONG: 86 % of Year: 11		2010: 66 SHORT: 65 LONG: 65 % of Year: 3
	2010: 79 SHORT: 78 LONG: 76 % of Year: 6		2010: 57 SHORT: 57 LONG: 58 % of Year: 2

Exhibit C2
RUNWAY USE SCENARIOS
EXISTING AIRFIELD

RUNWAY USE SCENARIO	HOURLY CAPACITY	RUNWAY USE SCENARIO	HOURLY CAPACITY
	2010: 106 SHORT: 105 LONG: 103 % of Year: 68		2010: 75 SHORT: 75 LONG: 75 % of Year: 4
	2010: 102 SHORT: 100 LONG: 98 % of Year: 4		2010: 66 SHORT: 66 LONG: 64 % of Year: 2
	2010: 95 SHORT: 95 LONG: 86 % of Year: 11		2010: 66 SHORT: 65 LONG: 65 % of Year: 3
	2010: 79 SHORT: 78 LONG: 76 % of Year: 6		2010: 57 SHORT: 57 LONG: 58 % of Year: 2

Exhibit C3
RUNWAY USE SCENARIOS
WITHOUT RUNWAY 17-35

TABLE C4
Demand-Capacity Summary
Albuquerque International Sunport

Year	Design Hour Operations	Annual Operations	Hourly Capacity (Existing)	ASV (Existing)	Hourly Capacity (w/o 17-35)	ASV (w/o 17-35)
Base	42	180,553	90.6	390,582	90.1	388,323
2015	46	197,900	76.7	330,326	76.3	328,403
2030	59	255,000	75.5	325,081	75.1	323,158

SENSITIVITY ANALYSIS – RESTRICTED USE OF RUNWAY 17-35

The potential use of Runway 17-35 for aircraft weighing less than or equal to 12,500 pounds has been examined, consistent with alternatives presented in the Environmental Assessment. While one alternative considers a reconstruction of the original runway length for small aircraft, another alternative considers reconstruction of only 5,000 feet south of Runway 8-26. For purposes of the capacity analysis, the impact on annual service volume is the same. While retaining use of the alignment improves the airfield capacity (when compared to closure of the runway), the incremental increase in capacity is less than one percent.

Appendix D

RUNWAY 17-35 PAVEMENT CONDITION REPORT AND REHABILITATION ANALYSIS

FINAL REPORT

ALBUQUERQUE INTERNATIONAL SUNPORT

RUNWAY 17-35 PAVEMENT CONDITION REPORT AND REHABILITATION ANALYSIS

March 2010

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1.0 PROJECT SUMMARY AND BACKGROUND

1.1 Purpose and Need

Runway 17-35 historically served as Albuquerque International Sunport's crosswind runway from its original construction in 1939 through 1995 when Runway 3-21 was reconstructed to air carrier standards. Runway 17-35 continued to serve as a crosswind runway on an as-needed basis, but use was limited after this point in time due to several factors:

a. Pavement rutting and raveling began to appear on Runway 17-35 and Taxiway C in the mid-1990's.
b. Runway 3-21 and Runway 8-26 have been operated in a pseudo-parallel runway system, and operation of Runway 17-35 severely curtails that mode of operation (intersects both runways).
c. Use of the Runway 17 for approaches and Runway 35 for departures by air carrier aircraft was limited to a 20-knot crosswind component in the late 1990's due to the condition of the pavement.
d. In January 2006, the Aviation Department limited the use of Runway 17-35 and Taxiway C to small aircraft (12,500 lb GTOW and below) due to the visible pavement distress and safety concerns of large aircraft suffering damage from the failing pavement.

This report has been prepared to analyze and rate the existing condition of the Runway 17-35 and Taxiway C asphalt concrete pavements, to make recommendations for rehabilitation of the facility, and to present conceptual project cost estimates for the rehabilitation of the facility.

1.2 Pavement History

Runway 17-35 was originally constructed in 1938 as part of the initial development of the current Albuquerque International Sunport location. Several rehabilitation projects were performed on the pavement, both under the military command and after the City of Albuquerque acquired the airfield in the mid 1960's. In 1986, the runway and parallel taxiway was

reconstructed under a FAA-funded project. The reconstruction project removed the runway pavement section to the subgrade and reconstructed it with an asphalt concrete pavement section consisting of 16 inches of asphalt concrete placed on 20 inches of prepared subgrade in the critical areas. Taxiway C was reconstructed with the same pavement section as well.

In non-critical sections, a keel section was constructed across the center 50 feet of the runway with the 16 inch asphalt concrete pavement section. A transition from 16-inch asphalt pavement to 12-inch thick asphalt pavement reaches from the 50 ft centerline offset to 75 ft centerline offset on each side of the runway, and the 12-inch asphalt thickness is carried to the shoulders. The runway was constructed to a width of 150 ft. The 25 ft wide shoulders were constructed with an 8-inch asphalt pavement surface over 12 inches of prepared subgrade. Major storm drainage improvements and reconstruction of the airfield lighting and signage systems were also included in the project.

1.3 Design Criteria

The pavement design for Runway 17-35 and Taxiway C was based on a 350,000 gross take-off weight aircraft with dual tandem wheel gear (B727 aircraft) in accordance with FAA design criteria. 50,000 annual departures were used in the pavement design as well. The pavement thickness was calculated using subgrade soil CBR (California bearing ratio) of 20 based on field investigations. FAA Advisory Circular 150/5320-6C was used as the basis for the pavement design. Table 1-1 summarizes the pavement design developed for the reconstruction of Runway 17-35, as indicated in the Runway 17-35 and Taxiway 14 Preliminary Report, 1985.

Table 1-1

Pavement Section – Runway 17-35

Pavement Area	**Surface Course**	**Base Course**	**Subgrade Preparation**
Critical Areas (center 50 ft)	4-in asphalt	12-in asphalt stabilized base	20-in depth from top of subgrade
Non-critical Areas (outer 25 ft each side w/25 ft transition to Critical Area)	4-in asphalt	8-in bituminous base course	20-in depth from top of subgrade
Shoulder Areas	3-in asphalt	5-in bituminous base course	12-in depth from top of subgrade

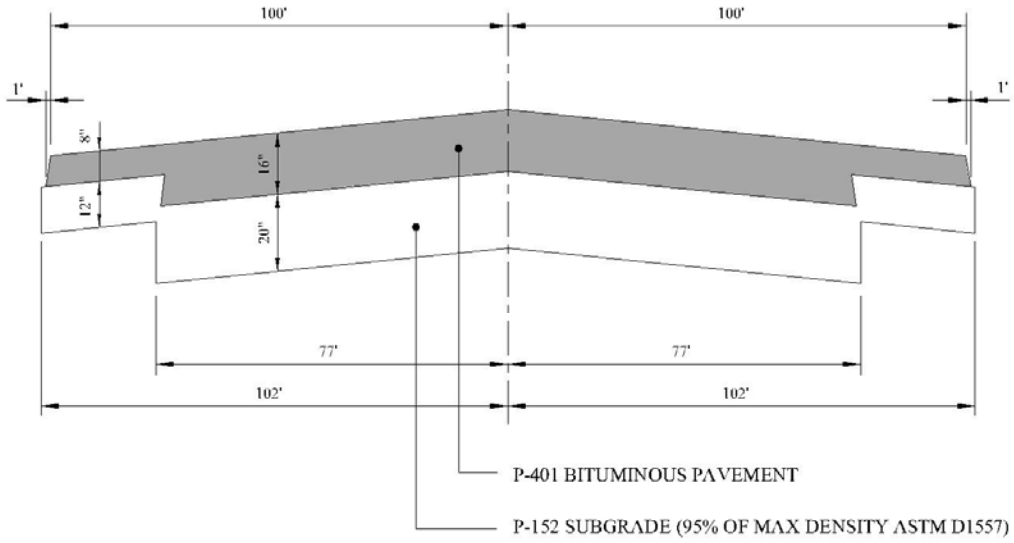

FIGURE 1-1
EXISTING TYPICAL RUNWAY 17-35 SECTION

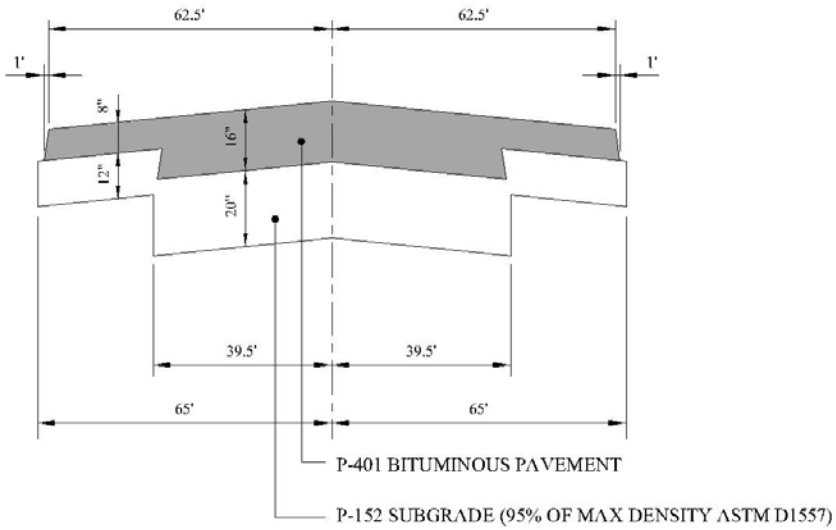

FIGURE 1-2
EXISTING TYPICAL TAXIWAY C SECTION

1.4 Original Construction and Rehabilitation History

Runway 17-35 was originally constructed in 1938 with the development of the current Albuquerque International Sunport site by the Works Project Administration. The runway was extended in 1943 by the US Army Corps of Engineers after the airfield became a training facility for the US Army Air Forces. Concrete warm-up aprons were added in 1945 to each end of the runway. At that time, the runway pavement surface was 10,000 ft long by 200 ft wide. The pavement section consisted of 2 inches of asphalt surfacing over 9 to 10 inches of "caliche-gravel" base course.

The center 150 feet of the south 9,000 feet of the runway was reconstructed in 1968, leaving the original pavement in the outside 25 feet of each side of the runway. The reconstructed center section consisted of 9 inches of the original "caliche-gravel" base mixed with 4 percent Portland cement and re-laid as a soil cement base course. A 3-inch asphalt surface course was placed on top of the soil cement base course. No other improvements were made to the runway between 1968 and the 1986 reconstruction project.

Taxiway C, formerly known as Taxiway 14, was constructed as a parallel taxiway on the west side of the northern portion of Runway 17-35 as part of the 1986 improvements. The pavement section for Taxiway C constructed in the 1986 project is shown in Table 1-1 and in Figure 1-2. The portion of Taxiway C adjacent to the Terminal Apron was reconstructed in 2004 as part of the Taxiway A, B and C Reconstruction project. That portion of Taxiway C has a pavement section consisting of 16 inches of Portland cement concrete pavement on 20 inches of prepared subgrade.

Prior to the construction of Taxiway C, access to the north end of Runway 17-35 was made using Taxiway D (previously known as Taxiway T-1) located on the east side of the runway, opposite from the terminal area. Taxiway D, north of Runway 8-26, which previously served the north end of Runway 17-35, was closed in the mid-1990's due to poor pavement conditions. The Taxiway D pavements in this area date back to the 1943 improvements with a 3-inch asphalt overlay placed in 1938.

2.0 EXISTING CONDITIONS

2.1 Geotechnical Field Investigation and Findings

Visual indication of problems with the runway and taxiway pavement problems have been noted since the mid-1990's with severe rutting, raveling on the surface, and moisture evident in surface cracks. On July 22-23, 2009 eight cores of the pavement section at various locations along the Runway 17-35 alignment were taken for visual inspection and laboratory identification of the asphalt pavement section and underlying subgrade. A copy of the boring logs, laboratory results, and photos taken of the pavement cores are included in Appendix A.

A review of the pavement cores and the subgrade boring samples indicate the failure issue is within the asphalt pavement section. The subgrade soils sampled have not shown high moisture contents, and the samples do not contain foreign or otherwise poor material. The pavement cores taken exhibit varying stages of stripping of the asphalt from the larger aggregate (greater than ½ inch aggregates). In some cases, the aggregate is severely stripped of the asphalt material, leaving "clean" rock below the top lift of pavement. An example of the stripped aggregate is shown in the photo below.

Figure 2-1 Asphalt Pavement Core – Runway 17-35 Core No. 2 (July, 2009)

Asphalt aggregate is stripped clean of asphalt material at depth of 3 inches below surface.

The investigation performed in July, 2009 is consistent with the results of a geotechnical investigation performed on Runway 17-35 in 1992. The 1992 investigation was performed after cracks in the runway pavement were showing signs of excessive moisture migrating out of the pavement. Vertical movement was noted in the pavement surface from light loads applied by vehicles. During the field investigation, the top layer of the asphalt pavement section was peeled up using a square-edged shovel. The underlying material was wet and the asphalt material stripped from the aggregate in a similar fashion to the conditions found in 2009.

The cause of the moisture entering the pavement section below the top lift of asphalt concrete appeared to be a function of segregation of the near surface aggregate at the edge of a lift of asphaltic concrete placed during construction. It was noted in the 1992 pavement investigation report that the segregation would not be obvious during placement. Weathering, rubber removal, and impact loads from aircraft caused the asphalt pavement to lose much of the finer binder aggregates, especially at the pavement joints. This results in an open surface that allows moisture penetration. The water trapped within the underlying mat would tend to weather the asphalt resulting in the stripping that has been observed. A copy of the 1992 pavement investigation report is included in Appendix B.

A portion of Runway 17-35 between Taxiway E and Runway 12-30 and a portion of Taxiway C (known as Taxiway B in 1992) near between Taxiways C1 and C2 were milled and an inlay of new asphalt concrete placed for a new surface course as an emergency change order to the Taxiway A Reconstruction project. This work was performed to get an acceptable pavement surface on the runway and taxiway during the periods of heavy use and was considered a temporary fix for a problem that was evident in varying stages along the runway and taxiway length Taxiway C.

In an effort to “seal” the pavement surface to minimize moisture from penetrating the susceptible asphalt pavement layer below the top lift, a coal-tar rejuvenating pavement seal along with an extensive crack sealing was performed on Runway 17-35 in 1998.

Maintenance of the Runway 17-35 and Taxiway C pavements was critical at this time due to the periodic extended closures of Runway 8-26 during the reconstruction of Taxiway E, Taxiway A, Runway 3-21, and Runway 8-26 from 1992 through 1996. During periods of Runway 8-26 closures, Runway 17-35 was the only commercial service runway at the Sunport. Failure of Runway 17-35 and Taxiway C pavement could have virtually closed the airport if it occurred during a construction closure of Runway 8-26.

Additionally, it must be noted that prior to 1995, with the opening of the reconstructed and improved Runway 3-21, Runway 17-35 was the commercial service crosswind runway at the Sunport, and its use was necessary when crosswind component exceeded the capabilities of these aircraft. Improvements made to Runway 3-21 to commercial service facility decreased significantly the necessary use of Runway 17-35.

A visual inspection was made on the asphalt runway pavement surface on March 12, 2010 with measurements taken of pavement distress types on six equal areas of the northern portion of the runway (from Taxiway B to the threshold of Runway 17). This inspection was held to determine a pavement condition rating using statistical analysis of a sampling of a pavement section; in this case, the section of Runway 17-35 from the north threshold to the edge of Taxiway B. The inspection measured the following surface distresses of the existing pavement:

a. Alligator Cracking
b. Block Cracking
c. Corrugation
d. Depression
e. Jet Blast Damage
f. Longitudinal and Transverse Cracking
g. Oil Spills
h. Patching
i. Polished Aggregate
j. Raveling and Weathering
k. Rutting
l. Shoving from Concrete Pavements
m. Slippage Cracks
n. Swells

The measurement of these distresses is typically used in developing an objective, repeatable rating system for use in pavement management systems. This inspection was performed to identify the pavement's existing surface operational condition. The pavement structural integrity is not a part of the analysis used as part of this inspection. The resulting condition index is not, therefore, a complete and total evaluation of the pavement section's overall capacity to operate as an air carrier facility. The condition presented in the geotechnical investigation presented above provides the data that prevents the use of the runway for air carrier aircraft and points to the need to reconstruct the pavement if it is to operate satisfactorily as a runway in the future.

The results of the pavement surface condition survey suggest that the pavement surface is in poor condition. If a new pavement without any surface defects has a pavement surface condition index of 100, the existing pavement surface rating is a 28. This rating indicates that as a minimum, a major rehabilitation is necessary to extend the service life of the pavement surface. Serious surface defects on the pavement surveyed include medium rutting across the center section of the pavement, extreme reveling and weather alternating with bleeding across most of the surface area, medium and high intensity longitudinal cracking, and severe surface depressions concentrated in the center section of the pavement surface. Distress deduct values were assigned using procedures outlined in Pavement Management for Airports, Roads and Parking Lots, M.Y. Shahin, Chapter 3 Pavement Condition Survey and Rating Procedure, 1998. This procedure is consistent with pavement rating conditions survey procedures adopted by the Federal Aviation Administration and the US Army Corps of Engineers.

A visual inspection of the asphalt runway surfaces south of Taxiway E indicates that this condition is consistent along the entire length of the runway. South of Taxiway E, the asphalt surface is block-cracked across the majority of the surface. Rutting and surface depressions also exist in the alignment south of Taxiway E.

The rutting and surface depressions that were observed are consistent with the information gathered from the cores taken in July, 2009 and in 1992. The loss of load-bearing capacity has resulted in pavement failure exhibited in the surface rutting and depressions. The raveling and weathering observed is most severe adjacent to the longitudinal cracks. The longitudinal cracks

appear to have occurred originally at the pavement joints, as is typical in asphalt pavements. Most of the joint cracks have been sealed in the past, but the crack seal material is weathered and failing due to the weathering of the pavement crack and of the seal material. Additional longitudinal cracking was observed at half and quarter joint spacing. Block cracking was observed connecting the longitudinal cracks in the transverse direction.

The pavement surface overall appears open with the loss of the surface fines severe across the majority of the surface. The 1992 investigation indicated that the loss of the surface fines may allow moisture into the lower asphalt layers, creating a stripping issue with the underlying aggregate. This is consistent with the cores taken in July 2009.

A copy of the pavement surface condition survey data sheets is included in Appendix C.

2.2 Summary of Existing Conditions

The six pavement cores were taken at random locations along the Runway 17-35 alignment on July 22-23, 2009 show stripping in the underlying asphalt lifts in various stages from low severity (noticeable only on close examination) to extreme severity (virtually clean aggregate). A pavement core was taken from Taxiway C at the intersection of Taxiway C3 that indicates similar subsurface distress in this pavement as well.

As stated above, the pavement surface condition index was calculated at a rating of 28 out of 100 from data gathered during the March 12, 2010 inspection. Overall, the pavement surface is in poor condition, with various severity of rutting, raveling, and cracking evident across the majority of the runway surface. Taxiway C, from C1 to the Terminal Apron, has severe longitudinal rutting and severe surface depressions along its alignment. Generally, the rutting and surface depressions on Taxiway C are more severe than the rutting and surface depressions on Runway 17-35 in both frequency and depth of depression.

From the data gathered and subsequent analysis, it is recommended that Runway 17-35 and Taxiway C require reconstruction if the pavements are to be brought up to air carrier capacity.

Continued use as small aircraft facility (12,500 lb GTOW or below) should only be continued with monitoring of the pavement surface for pavement failures that could compromise safety (continued worsening of the rutting and depressions and FOD from spalled and breaking cracks and from other surface failures).

The condition of the pavement has reached a point that the surface will continue to fail and create FOD hazards from the deteriorating surface. The data suggest that the pavement condition is past the rehabilitation zone and serious failures exhibited in potholes, surface depressions greater that 1-inch in relief, and loose material from joints that are breaking back will accelerate in the future.

3.0 PROPOSED CONDITIONS

3.1 Rehabilitation Alternatives and Costs

Considering the pavement surface condition including the rutting, surface depression failures, raveling and stripping, a pavement mill and overlay would be necessary to bring the runway and taxiway into a satisfactory surface condition for continued use by small aircraft and certainly by larger aircraft. The condition of the subsurface pavement does not allow just a mill and overlay rehabilitation to correct the deficiencies of the pavement section, however. The varying depth of severe stripping of the aggregate below the surface lift of asphalt concrete pavement requires a reconstruction project to bring the pavements into a satisfactory condition for aircraft use including small aircraft. The condition of the pavement has reached a point that the surface will continue to fail and create foreign object debris (FOD) hazards from the deteriorating surface. Additionally, it may not be possible to overlay the underlying asphalt material with new material due to the lack of binder in the lower courses. Allowing underlying weathered material to remain in place would create a situation of unpredictable performance in the future.

4.0 RECOMMENDATIONS

Reconstruction is recommended as the minimum rehabilitation technique, given the existing conditions, if the facility is to be used by air carrier aircraft. Reconstruction is also recommended for the facility if it is to continue as a small general aviation aircraft facility as well, due to the advanced deterioration of the underlying asphalt layers as well as the severity of the existing surface distresses.

Reconstruction of the runway and taxiway in their current alignment to air carrier standards is estimated at approximately $43.6 million. Reconstruction of the facility to accommodate general aviation aircraft with gross take of weights (GTOW) of 12,500 lbs or less and with the same length as the current runway is estimated at $14.1 million. Reconstruction of a portion of Runway 17-35 from Taxiway E south, providing for a 5,000 ft length, is estimated at $11.4 million. These cost estimates are conceptual and should be viewed as order of magnitude cost estimates.

APPENDIX A

Runway 17-35 and Taxiway C
Geotechnical Investigation
July 2009

GEO-TEST

RECEIVED
SEP 0 9 2009
MOLZEN-CORBIN & ASSOCIATES

September 8, 2009
File No. 1-90703

Original Sent To
Main File

Molzen-Corbin & Associates
2701 Miles Road SE
Albuquerque, New Mexico 87106

ATTN: **Mr. Mike Provine, P.E.**

INRE: **Geotechnical Engineering Services**
Runway 17-35 Closure
Albuquerque International Sunport
Albuquerque, New Mexico

Dear Mr. Provine:

Transmitted herein are the boring logs, laboratory results and photos of the subject project.

It has been a pleasure to serve you on this project. Should you have any questions or need further information, please do not hesitate to contact me.

Sincerely,
GEO-TEST, INC.

Tim Byres, SET

cc: Addressee (1)

Enclosures

GEO-TEST, INC.
3204 RICHARDS LANE
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LAS CRUCES,
NEW MEXICO
88007
(575) 526-6260
FAX (575) 523-1660

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/22/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 1

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft 20 40 60 80
							ASPHALT	17.5" Asphalt	
					9		SC	CLAYEY SAND, some gravel, low plasticity, medium dense, moist, brown	
								STOPPED DRIVE AT 3'	
5									

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

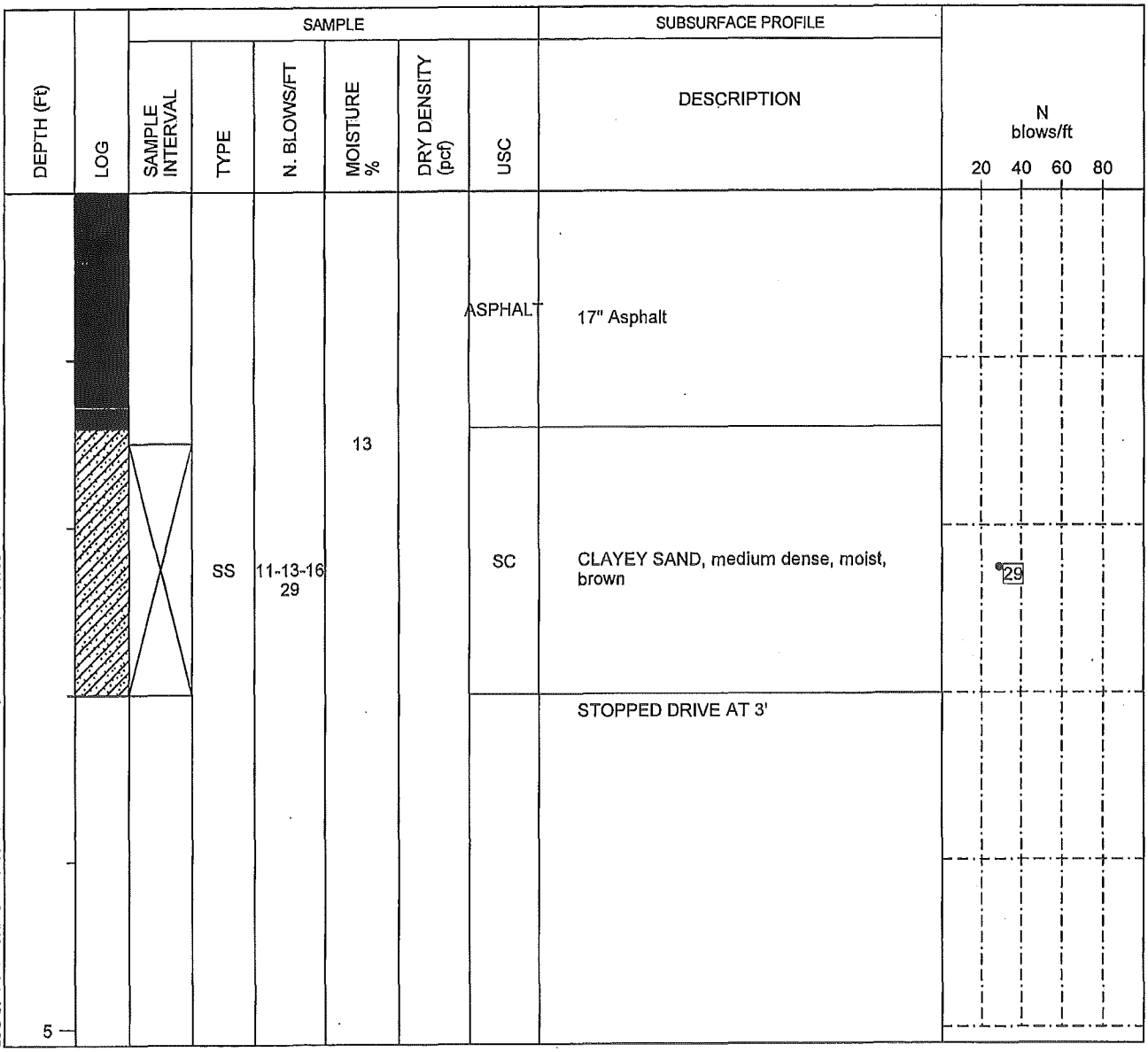
Project: Runway 17- 35 Closure
Date: 07/22/2009 Project No: 1-90703
Elevation: Type: 3" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 2

During Drilling: None After 24 Hours:



LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/22/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 3

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	SUBSURFACE PROFILE DESCRIPTION	N blows/ft (20 40 60 80)
							ASPHALT	17" Asphalt	
			SS	13-20-25 45	13		SC	CLAYEY SAND, low plasticity, medium dense to dense, moist, light brown	45
								STOPPED SAMPLER AT 3'	
5									

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/22/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 4

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft (20 40 60 80)
							ASPHALT	16" Asphalt	
					7				
			SS	25-29-31 60			SC	CLAYEY SAND, low plasticity, dense, moist, light brown	60
								STOPPED SAMPLER AT 3'	
5									

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/22/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 5

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft (20 40 60 80)
							ASPHALT	Approximately 16.5" Asphalt, extremely weathered and stripped	
			SS	20-33-24 57	11		SM	SILTY SAND, non-plastic, dense, moist, brown	57
5								STOPPED SAMPLER AT 3' NOTE: South of TW E, Approximately 500' south of 8-26 centerline, 27' east of 17-35 centerline	

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/23/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 6

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	SUBSURFACE PROFILE DESCRIPTION	N blows/ft 20 40 60 80
							ASPHALT	17" Asphalt	
			SS	21-34-23 57	6		SM	SILTY SAND, non-plastic, dense, moist, brown	57
5								STOPPED SAMPLER AT 3' NOTE: North of RW 3-21 7 RW 12-30 Intersection approximately 300' north of centerlines, 15' west of RW 17-35 centerline	

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/23/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 7

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft 20 40 60 80
							ASPHALT	16.5" Asphalt	
					7				
			SS	20-20-24 44			SM	SILTY SAND, non-plastic, dense, moist, brown	44
5								STOPPED AUGER AT 3' NOTE: Approximately 200' south of RW 12-30 & RW 3-21 Intersection, 12' east of RW 17-35 centerline	

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

GEO-TEST

Project: Runway 17- 35 Closure
Date: 07/23/2009 Project No: 1-90703
Elevation: Type: 6" Core

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 8

During Drilling: None After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft (20 40 60 80)
							ASPHALT	17" Asphalt	
					5				
			SS	19-28-21 49			SM	SILTY SAND, non-plastic, dense, moist, brown	49
								STOPPED SAMPLER AT 3' NOTE: Runway 17-35, approximately 100' north of concrete edge, 30' west of centerline	
5									

LOG OF TEST BORING 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 9/8/09

LEGEND

SS - Split Spoon
AC - Auger Cuttings
CAL - Modified California Sampler
AMSL - Above Mean Sea Level
CS - Continuous Sampler
UD - Undisturbed
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurments were made.

SUMMARY OF LABORATORY RESULTS

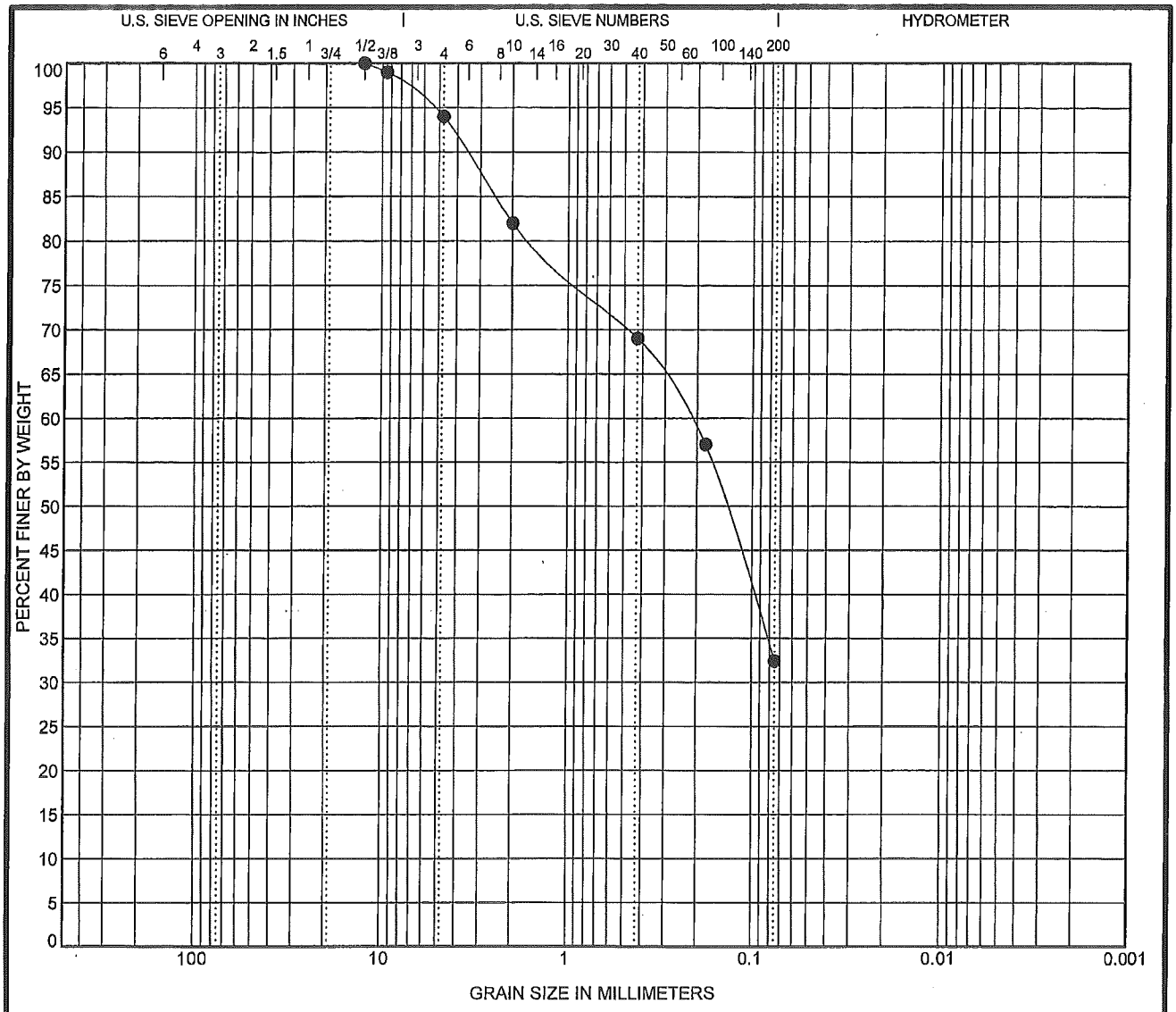
						SIEVE ANALYSIS PERCENT PASSING											
TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	3"
1	1.5	SC	9.0	27	11	32	52	69	82	94	99	100					
2	1.5	SC	12.7	29	14	36	59	83	94	98	100						
3	1.5	SC	13.0	27	12	39	61	86	96	99	100						
4	1.5	SC	6.6	25	11	41	64	87	95	99	100						
5	1.5	SM	10.5	NP	NP	27	53	83	94	96	99	100					
6	1.5	SM	5.8	NP	NP	19	34	62	87	93	98	98	100				
7	1.5	SM	7.3	NP	NP	27	59	94	99	100							
8	1.5	SM	4.8	NP	NP	22	54	90	99	99	100						

GEO-TEST

LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Runway 17- 35 Closure
Location: Albuquerque International Sunport
Number: 1-90703

SUMMARY OF LABORATORY RESULTS 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1	1.5	CLAYEY SAND(SC)	27	16	11		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1	1.5	12.5	0.223			6.0	61.6	32.4	

GEO-TEST

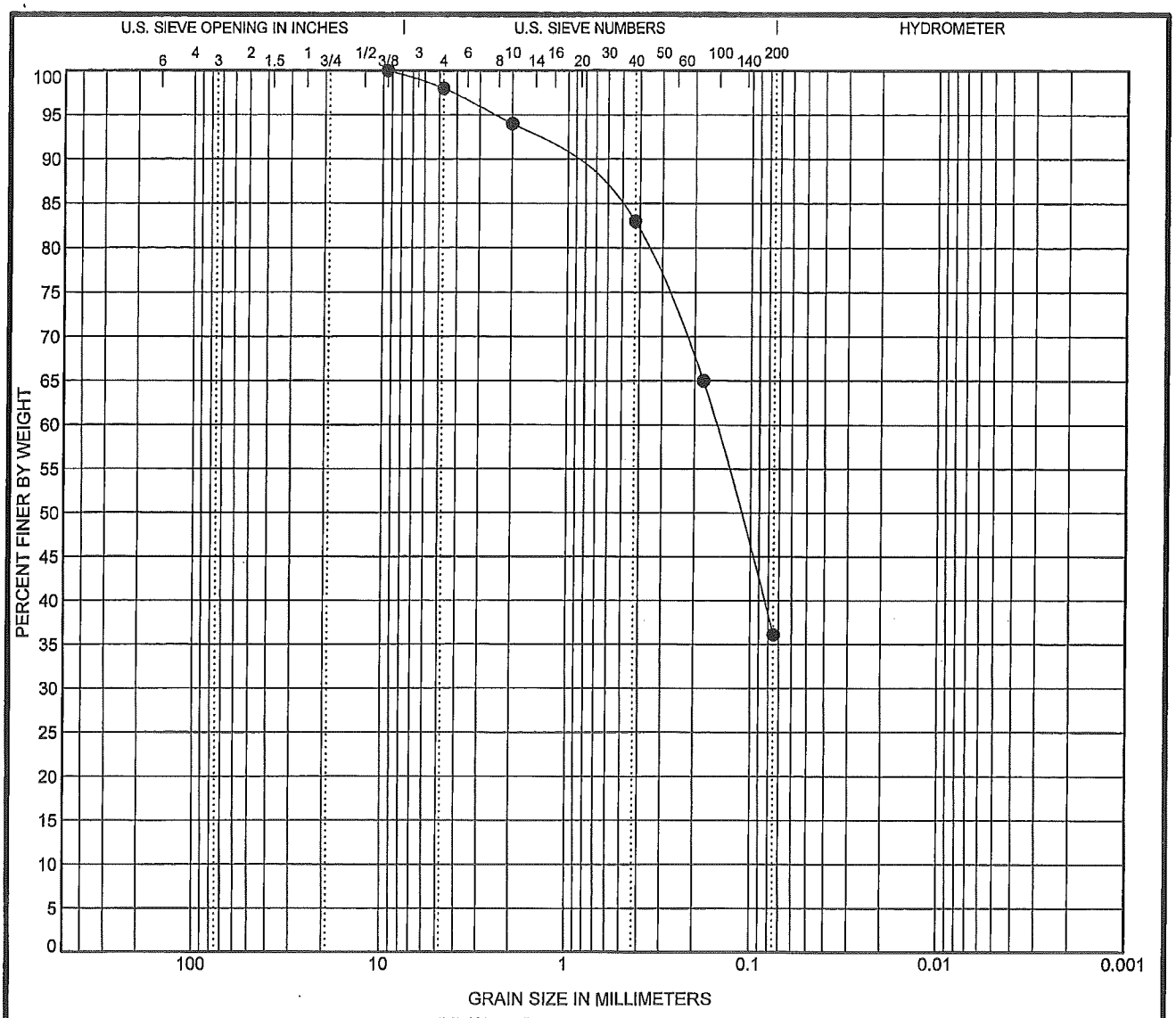
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO_TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	2	1.5	CLAYEY SAND(SC)	29	15	14		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	2	1.5	9.5	0.155			2.0	61.9	36.1	

GEO-TEST

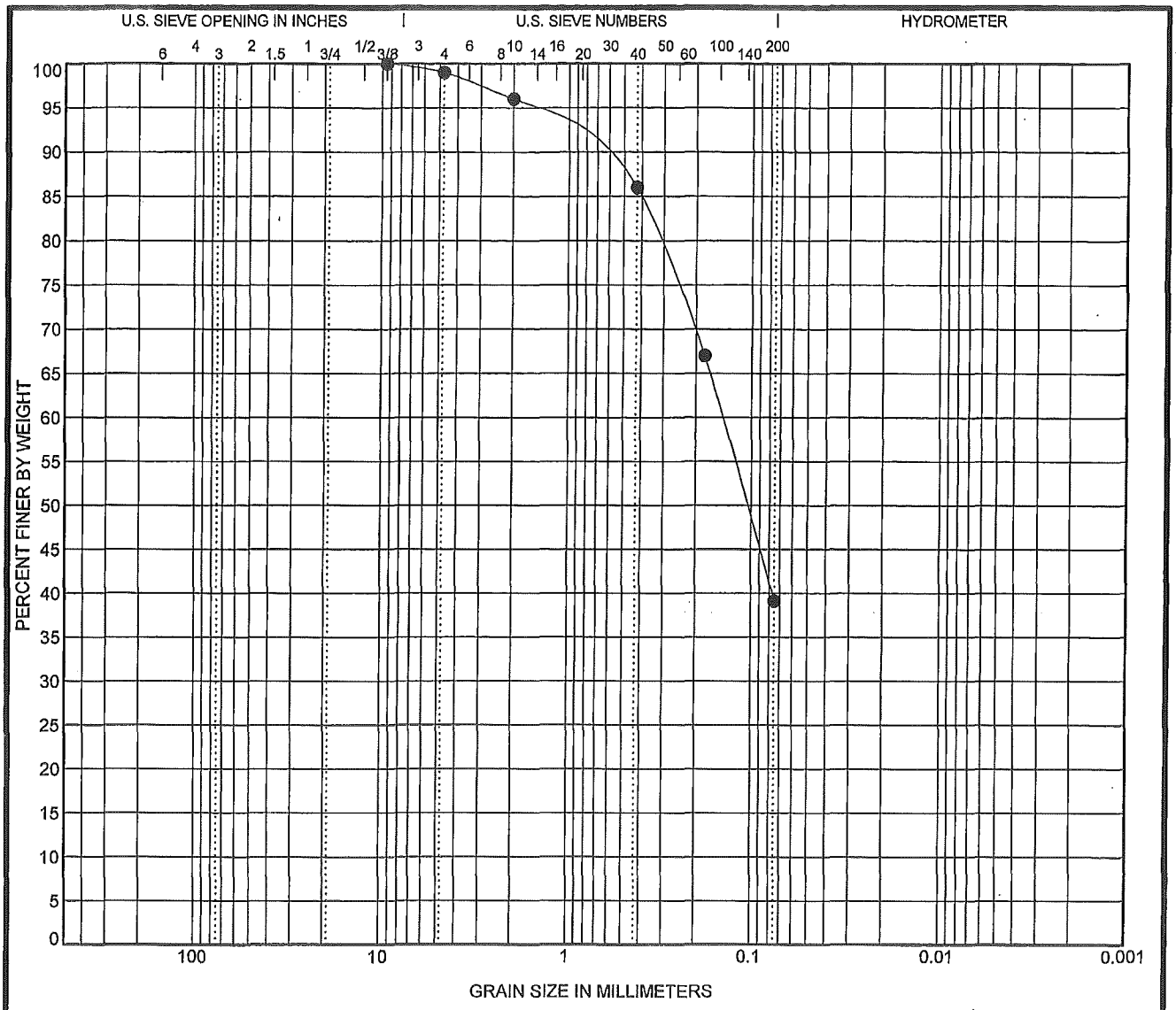
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	3	1.5	**CLAYEY SAND(SC)**	**27**	**15**	**12**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	3	1.5	**9.5**	**0.145**			**1.0**	**59.9**	**39.1**	

GEO-TEST

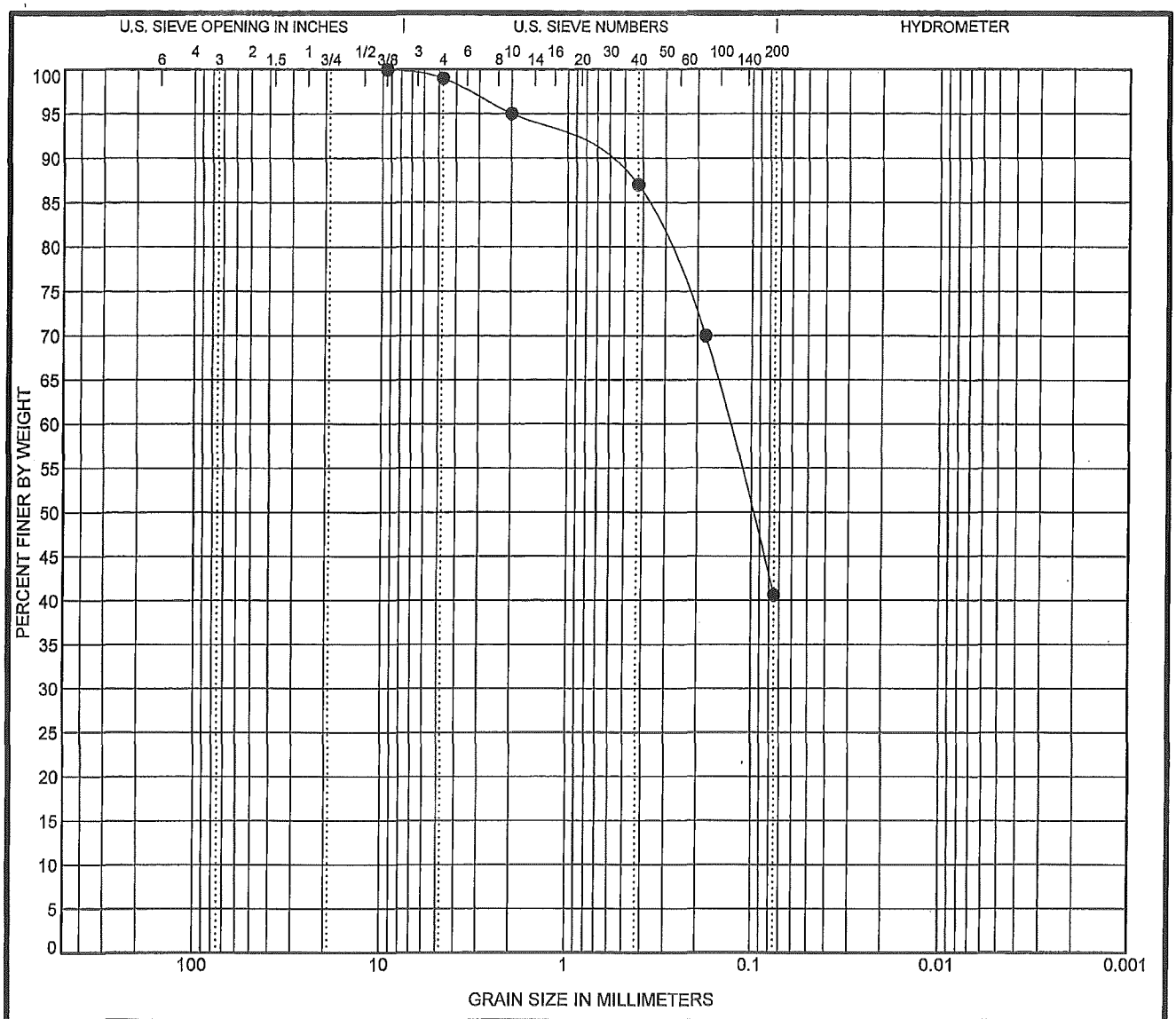
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	4	1.5	CLAYEY SAND(SC)	25	14	11		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	4	1.5	9.5	0.134			1.0	58.4	40.6	

GEO-TEST

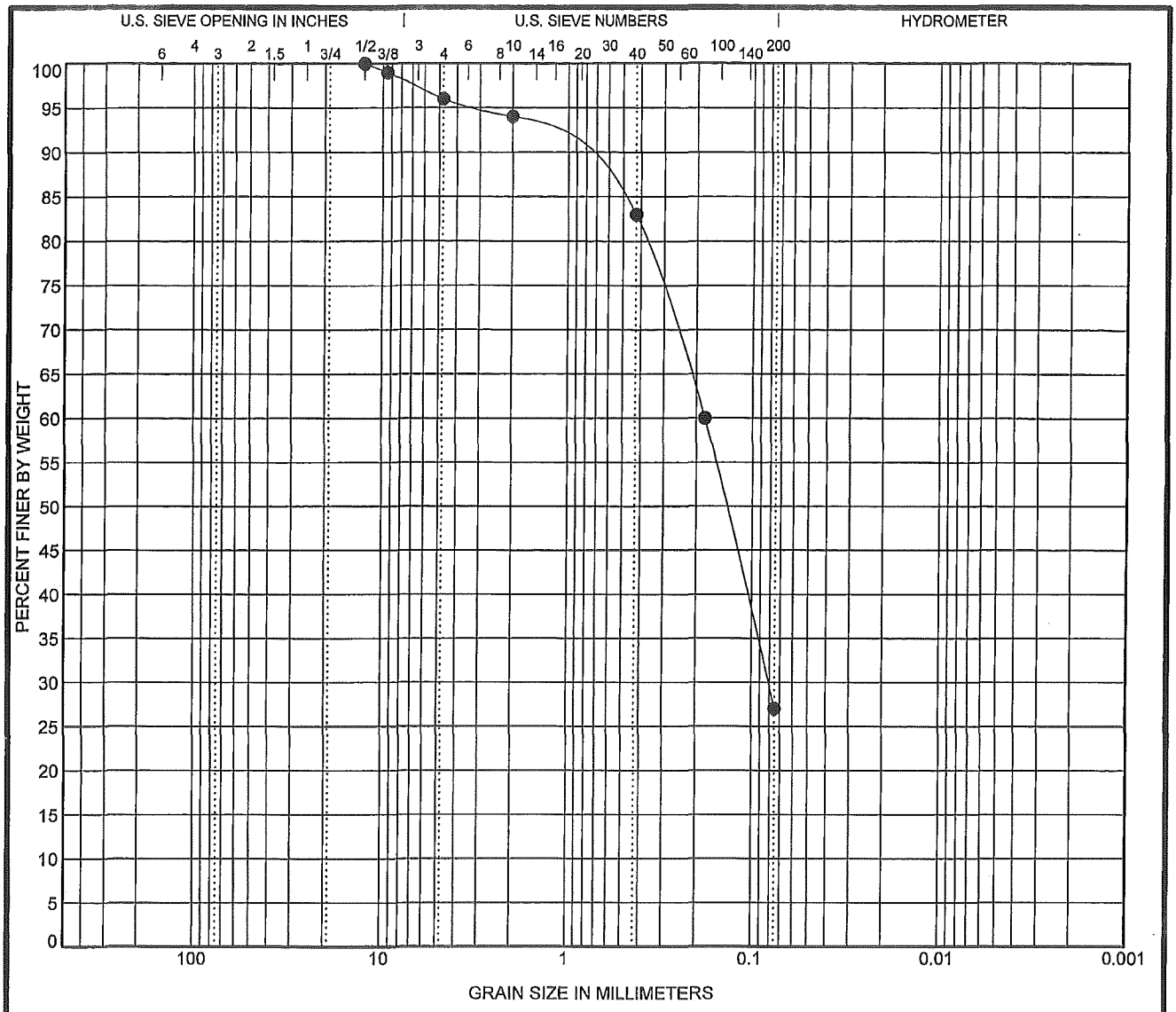
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	5	1.5	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	5	1.5	**12.5**	**0.18**	**0.081**		**4.0**	**69.0**	**27.0**	

GEO-TEST

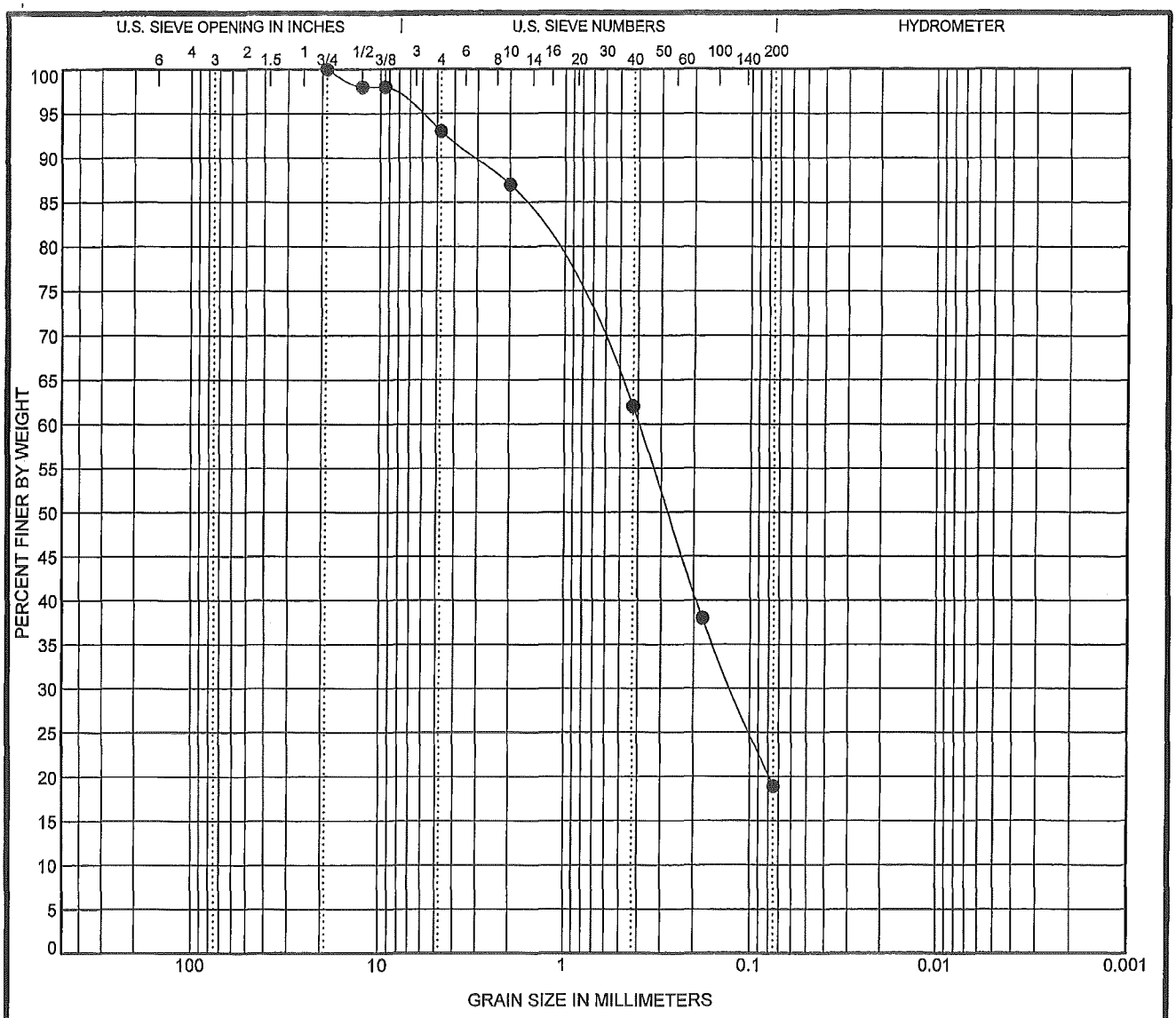
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	6	1.5	SILTY SAND(SM)	NP	NP	NP		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	6	1.5	19	0.396	0.125		7.0	74.1	18.9	

GEO-TEST

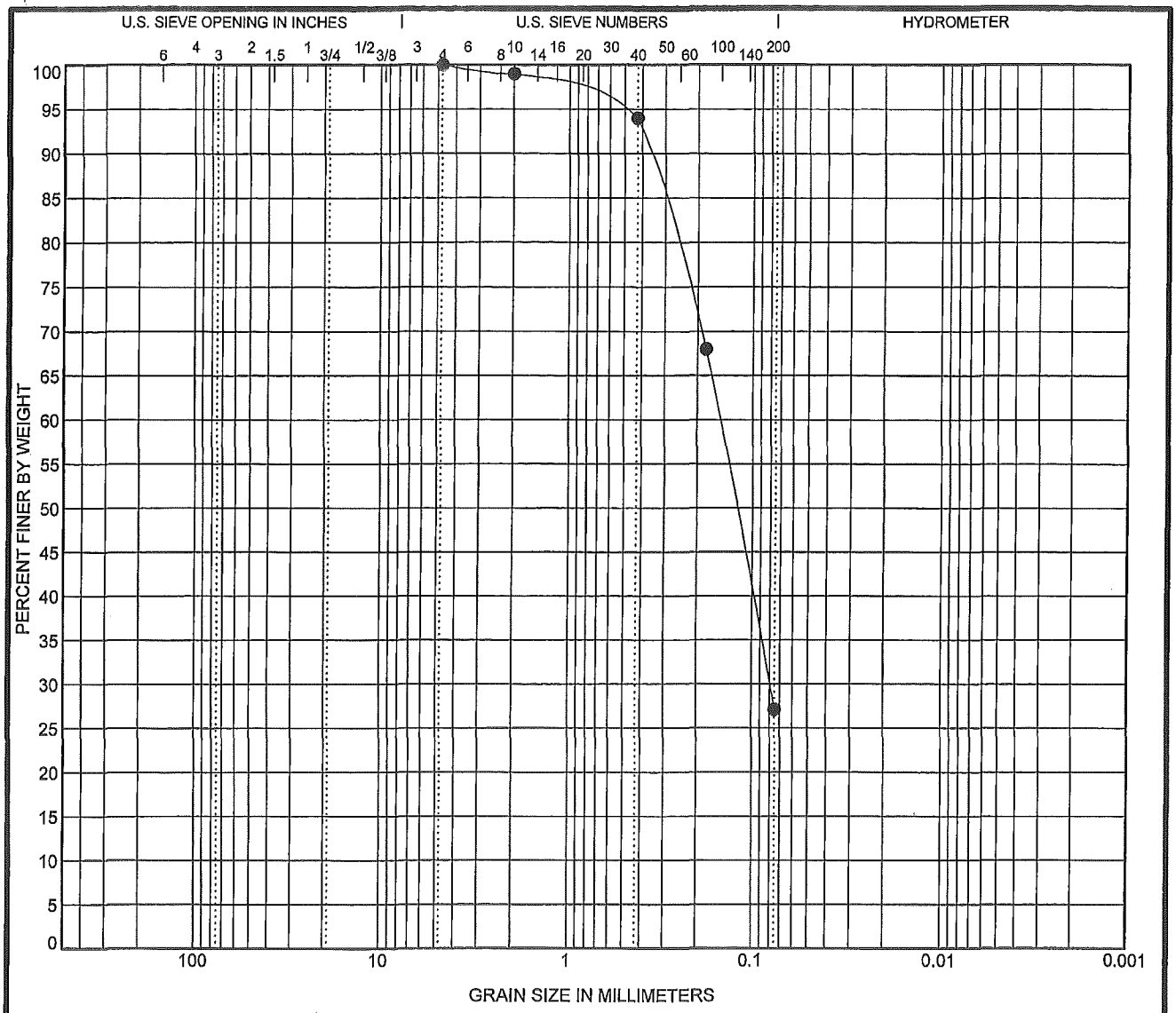
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	7	1.5	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	7	1.5	**4.75**	**0.152**	**0.08**		**0.0**	**72.9**	**27.1**	

GEO-TEST

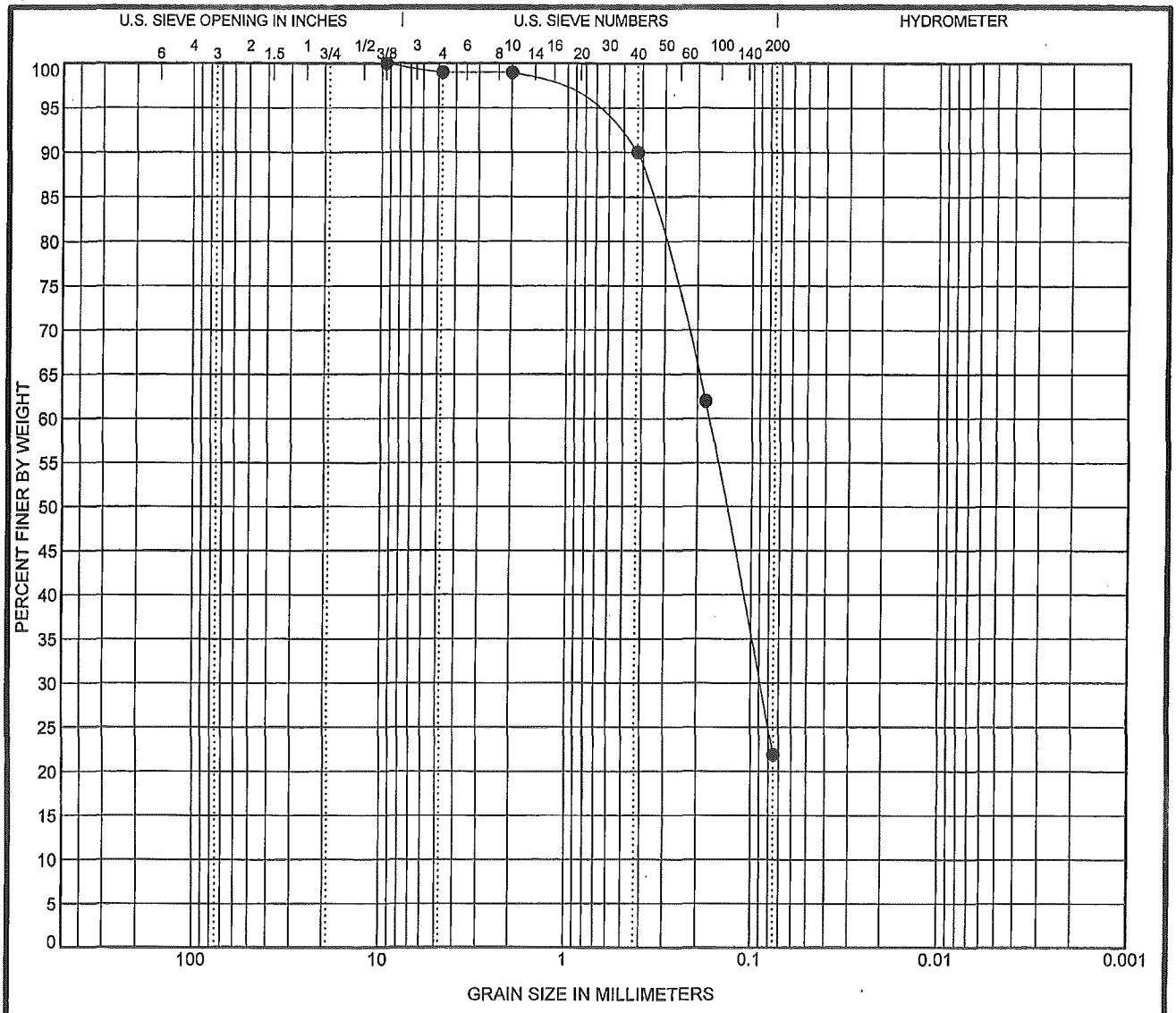
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	8	1.5	**SILTY SAND(SM)**	**NP**	**NP**	**NP**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	8	1.5	**9.5**	**0.172**	**0.09**		**1.0**	**77.1**	**21.9**	

GEO-TEST

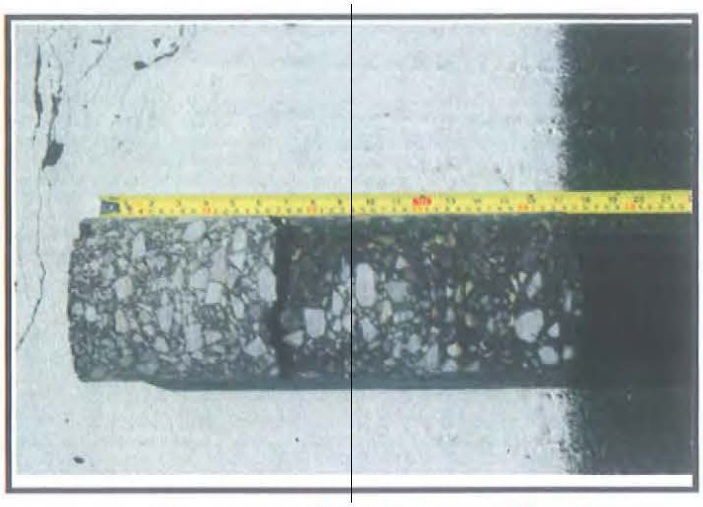
GRAIN SIZE DISTRIBUTION

Project: Runway 17- 35 Closure

Location: Albuquerque International Sunport

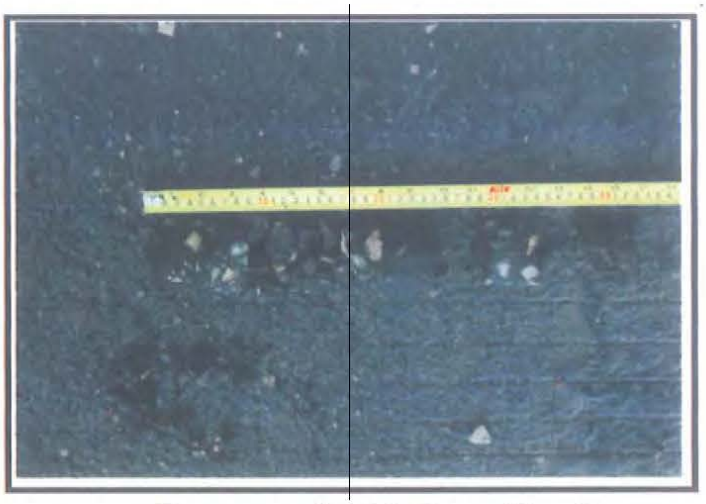
Number: 1-90703

US GRAIN SIZE 1-90703 RUNWAY 17-35 CLOSURE.GPJ GEO TEST.GDT 7/31/09

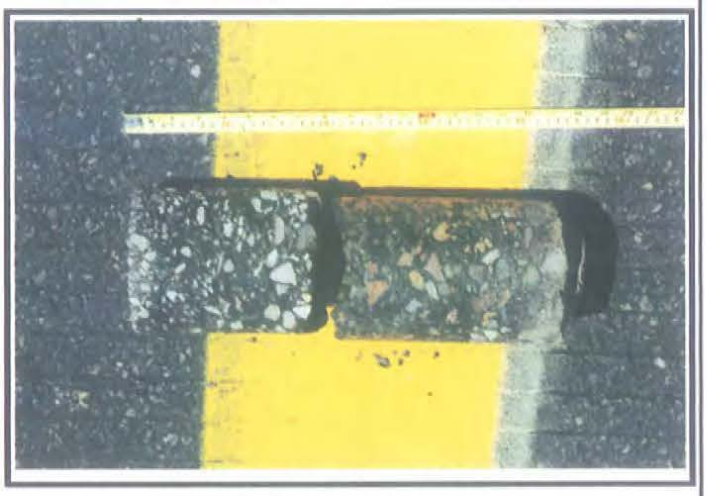


Runway 17-35 Core No. 1

Runway 17-35 Core No. 2



Runway 17-35 Core No. 3



Taxiway C Core No. 4

GEO-TEST

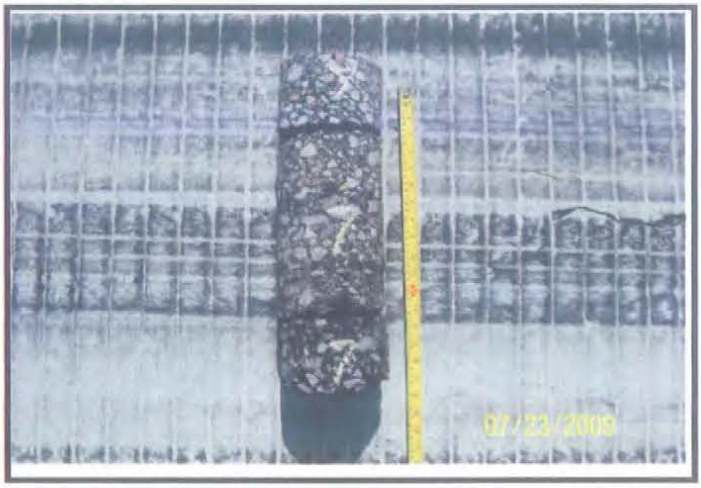
Project Number 1-90703 | September 2009

Runway 17-35 Closure
Albuquerque International Airport
Albuquerque, New Mexico

Runway 17-35 Closure

Runway 17-35 Core No. 5

Runway 17-35 Core No. 6



Runway 17-35 Core No. 7

Taxiway C Core No. 8

APPENDIX B

Runway 17-35 Material Investigation

June 1992

RUNWAY 17-35
ALBUQUERQUE INTERNATION AIRPORT
MATERIAL INVESTIGATION

PREPARED FOR:
MOLZEN-CORBIN AND ASSOCIATES

GEO-TEST

June 15, 1992

Molzen-Corbin and Associates
2701 Miles Road, S.E.
Albuquerque, New Mexico 87106

ATTENTION: **Mike Provine**

IN RE: **Runway 17 - 35**
Albuquerque International Airport
Albuquerque, New Mexico

Dear Mr. Provine:

Submitted herein is the Materials Investigation report for the above referenced project. The report contains the results of our field investigation, laboratory testing and recommendations for remediation.

It has been a pleasure to serve you on this project. If you should have any questions, please contact this office.

Respectfully Submitted:

GEO-TEST, INC.

Patrick J. Byres, P.E.

PATRICK J. BYRES 8126 REGISTERED PROFESSIONAL ENGINEER NEW MEXICO

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TABLE OF CONTENTS

GEO-TEST

Molzen-Corbin and Associates
Job No. 1-20509
June 15, 1992

INTRODUCTION

This report presents the results of paving materials investigation performed on the existing 17 - 35 Runway at the Albuquerque International Airport.

The objective of this investigation is to 1) Determine the in place condition of full depth pavement; 2) Determine lateral extent and depth of surface deterioration as observed; 3) Provide recommendations for remediation.

The investigation includes subsurface exploration, representative soil sampling, laboratory testing of the samples, performing an engineering analysis and preparation of this report.

EXISTING CONDITION

The existing runway consists of a 10,250 foot runway. The runway was reconstructed in 1985 with a full depth bituminous section. The section is on the order of 18 inches thick. Existing pavement consists of 16 inches of 1 1/4 inch maximum size aggregate bituminous mixture with a 2 inch surface consisting of 3/4 inch maximum size aggregate.

Visual observation indicates isolated surface areas of significant stripping of aggregate. The condition appears to be most pronounced at the south end of the runway and along joints formed by adjacent lifts of pavement placed during construction.

FIELD EXPLORATION

A total of 19 cores samples were obtained from the existing pavement section The cores were drilled at 500 foot intervals. This was performed to access the overall condition. Cores were also obtained from areas of observed surface distress to determine the condition of underlying pavement.

Five exploratory borings were drilled to ten feet below grade to access the condition of the existing subgrade.

GEO-TEST

LABORATORY TESTING

Prior to laboratory testing all samples were visually examined to evaluate the condition of both surface, as well as, underlying pavement at various locations.

Samples were grouped based on visual observation and tested. Tests performed on samples of asphalt pavement are as follows:

1) Extraction of Bitumen Content
2) Sieve analysis of aggregate
3) Specific gravity of asphalt
4) Rices specific gravity
5) Fractured faces of aggregate

RESULTS OF FIELD TEST AND OBSERVATIONS

The surface of portions of the existing 17 - 35 Runway show signs of stripping of asphaltic cement from aggregate. The stripping is most pronounced along joints in the southern end of the runway. The balance of the runway show minor amounts of surface stripping. The indicated distress is most pronounced along joints in all cases.

Core tests performed indicate only surface deterioration in most areas with deep deterioration in the area indicated on the site plan. This area extends from the south end of the runway north approximately 600 feet. Core tests indicate that severe stripping has occurred to approximately seven inches below the surface in worst case conditiions.

Results of laboratory tests indicated some correlation between calculated air voids and areas which show deeper stripping are as follows:

Test borings in subgrade, encountered slightly moist competent subgrade at all locations.

RESULTS OF FIELD TEST AND OBSERVATIONS (CONT.)

TABLE I	
Average Results from Top lift that appeared in good condition	
Unit Weight	146.2
% Asphalt	5.2%
% Voids	1.6%
Average Results from Top lift that appeared in poor condition	
Unit Weight	144.0
% Asphalt	4.1%
% Voids	5.5%
Average Results from bottom lifts that appeared in poor condition	
Unit Weight	148.4
% Asphalt	5.6
% Voids	2.3%
Average Result from bottom lifts that appeared in good condition	
Unit Weight	149.0
% Asphalt	5.7%
% Voids	1.9%

A review of testing performed during construction was accomplished. The tests performed during construction generally correlate well with tests performed in this investigation. Isolated cased of higher air voids were noted predominately in the southern portion, however, these were isolated rather than general conditions.

It is our opinion that the observed surface deterioration is a function of segregation of the near surface aggregate at the edge of a lift of asphaltic pavement placed during construction.

RESULTS OF FIELD TEST AND OBSERVATIONS (CONT.)

The segregation would not be as obvious during construction. However with weathering, some rubber removal and traffic particularly impact from landing traffic, the joints have lost much of the finer binding aggregates. This would create a more permeable zone as encountered in the field cores. Once water is introduced into the mat its loss through evaporation is limited because of the relatively small surface areas, as in any column of water. Water trapped within a mat would tend to weather the asphaltic mixtures. The weathered mixture would strip as observed and become a larger reservoir with a larger weathering front.

It is important to remove all weathered asphaltic mixture prior to repavement. Allowing underlying weathered mixtures to remain in place would create a situation of unpredictable performance.

RECOMMENDATIONS

Is it recommended to remove approximately 7 inches of pavement from the most deteriorated areas and replace with new asphaltic pavement. The most deteriorated area, based on our tests, consists of an area from the edge of concrete at the south end of the runway approximately 2,200 feet north. The width of the affected area is variable and the worst cases are scattered within the described area. Therefore, we recommend that the entire length be milled 3 inches deep. The milled area should extend along the center of the runway but not full width since deterioration is near the centerline. Once an area has been milled, observation and minor field testing will indicate those selective areas which will require deeper milling. The areas of deeper milling can be inlaid and a uniform pavement placed to bring the surface to design grade.

Further the following is recommended for consideration on this and future projects:

1) In lieu of several options of asphaltic mixes which are acceptable for submittal by the contractor, a limited set base can be utilized. These are mixes previously used at the facility. Those mixes and properties which have demonstrated the best performance in not only surface life but also joint detail and surface stripping should be utilized.

2) Construction specifications should contain a joint detail in method of construction. The detail should be demonstrated at the test strip portion of construction and tested by coring or saw cutting to verify adequacy.

CLOSURE

Our conclusions, recommendations and opinions presented herein are:

1) Based upon our evaluation and interpretation of the findings of the field and laboratory program.

2) Based upon an interpolation of soil conditions between and beyond the explorations.

3) Subject to confirmation of the conditions encountered during construction.

4) Based upon the assumption that sufficient observation will be provided during construction.

5) Prepared in accordance with generally accepted professional geotechnical engineering principles and practice.

We make no other warranty, either express or implied. Any person using this report for bidding or construction purposes should perform such independent investigation as he deems necessary to satisfy himself as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project. If conditions are encountered during construction that appear to be different than indicated by this report, this office should be notified.

	RUNWAY 17 - 35 CORES	VISUAL INSPECTION
1	North end of Runway @ #17. Total Length of Core = 8.75". Top lift in Good condition. Lower 2 lifts intact but in poor condition	Top Lift = 1.75" 2nd from Top lift = 3.0" 3rd from Top lift = 3.75"
2	250' South of Core #1 Total Length = 6.5" Core in good condition	Top Lift - 1.5" 2nd from Top - Length unknown
3	250' South of Core #2 Total length = 6.0" Core in good condition	Top lift = 1.5" 2nd from top = Length Unknown
4	500' South of Core #3 Total Length = 7.0" Top lift good condition Lower Lifts brittle and porous (poor condition)	Top Lift = 1.50" 2nd from Top = 3.75"
5	500' South of Core #4 Total Length = 6.2" Core in good condition	Top Lift = 1.50" 2nd from Top = Length unknown
6	500' South of Core #5 Total Length = 4.75" Top Lift in good condition Lower lift porous (Fair condition)	Top lift = 1.25" 2nd from Top = Length unknown
7	500 South of Core #6 Total Length = 7.75" Core in good condition	Top lift = 1.5" 2nd from Top = Length Unknown
8	500' South of Core #7 Total length = 6.6" Core in good condition	Top lift = 1.5" 2nd from Top = Unknown Length
9	South of Taxiway E Total length = 8.75" Core in good condition	Top lift = 1.5" 2nd from top = 3.0" 3rd from top = 1.50"
10	500' South of Core #9 Total length = 7.0" Core in good condition	Top lift = 1.75" 2nd from Top = 2.75" 3rd from Top = Unknown length